NEW SERIES. No. 90.] [APRIL, 1914.

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY

I.—ARE MEANINGS INHERITED?

BY C. LLOYD MORGAN.

IN the new edition of his *Manual of Psychology* Mr. Stout has added a valuable and suggestive chapter on Instinct. The question of central interest for psychologists there raised is, I think, that which I have placed at the head of this article. Of subsidiary interest is the range of the term. It has, as is well-known, a narrower and a wider application. In both, stress is laid on the specifically hereditary character of that which is instinctive, as contrasted with that which is in some way acquired during the course of individual experience. Both therefore involve the analytic disentanglement of closely interwoven factors, those of nature and those of nurture—those which are dependent on heredity-relatedness, and those which are dependent also on relatedness with the environment. In its wider application instinct includes "innately specialised interest, attention, and power of learning by experience in certain directions rather than others". What is inherited is a mental disposition with a specific conative tendency. Any such instinct may give rise to varied behaviour by which the innately specialised interest may be furthered. Mr. McDougall has ably discussed the human instincts of this order in his *Introduction to Social Psychology*. But here the task of analysis is peculiarly difficult. In its narrower application the stress is laid on specific modes of behaviour which are primarily approached from the biological side, but which have a psychological aspect in that they are correlated with modes of experience—or, since this word may be ambiguous, let us say, with modes of cognitive awareness with accompanying feeling-tone. Whether we should add conation also, depends on how this term is defined. Mr. Stout inclines to decide in favour of the wider application

of the word Instinct. Much here depends on the universe of discourse. Though I am myself disposed to favour the narrower usage where genetic problems are under discussion, and am prepared to urge that it is preferable on scientific grounds, I none the less agree with Mr. Stout that, in view of the position taken up by recent writers of authority, and in view of the usage of ordinary language, there are advantages in retaining the use of the word in its wider scope. In what I am here to say, however, I have the narrower usage chiefly in mind.

If we are to draw a distinction between instinctive and intelligent behaviour (it is better to use the distinguishing terms in their adjectival form) we must remember that it is almost impossible, perhaps quite impossible, to adduce examples of purely instinctive behaviour. Certainly what are commonly given as illustrations of the instincts of animals are blended results in which the instinctive preponderates in greater or less measure over the intelligent—but in which the intelligent is also present. Hence the need of analysis to enable us to distinguish, and if possible to evaluate, the instinctive and intelligent parts within the blended whole with which the psychologist has to deal. But distinguishing analysis is impossible unless we have clearly in mind the several characteristics of what are to be distinguished, the one from the other. The difficulty is, however, that two interpreters may not improbably, as matters now stand, disagree as to the characteristics on which stress should be laid. We should therefore seek the exact locus of disagreement. Then, and then only, shall we be in a position to decide which interpretation has the greater weight.

First, I shall characterise the instinctive and the intelligent in a manner that is fully open to the fire of Mr. Stout's criticism, since it is avowedly based on the assumption that meanings are not inherited. On this assumption the purely instinctive part of the behaviour, say, of a newly hatched duckling which is placed in water and swims, may be expressed symbolically as PB, where P stands for a presentation (a bare presentation to sense) and B for the behaviour which, on this view, is organically determinate. Of course the sensory presentation may be that of a complex situation; of course the behaviour itself affords a further presentation to sense; and of course what we infer from the observation of instinctive behaviour as it runs its course is an enchained sequence. The formula PB must therefore be read serially, and may be very complex, involving a definite sequence of different PB's as the instinctive situation develops. But, on

this interpretation, the instinctive sequence as such—that is, as analytically distinguished—is just Pb business from start to finish. The organising relationships are on this view organic.

It may perhaps be said that in the foregoing statement I have no right to use the word presentation. I ought, it may be urged, to speak of physiological stimulation. But this would involve a confusion of the biological and the psychological data. It is true that, on this view, the stimulation of receptors is the physiological condition, and the constitution of the organism is the physiological ground of the observed behaviour. By stimulation the behaviour as such is determined; in virtue of the inherited constitution it is also determinate. But the psychological data are the modes of awareness correlated with stimulation and response. The point here is that what the psychologist primarily deals with is a mode of experience, and if it be not a mode of experience he has no direct concern with it. But here again the ambiguity of the word experience is troublesome. It must suffice to say that what I speak of is bare acquaintance with bare appearance—just the raw material out of which experience in its more developed form may be fashioned. This raw material, however, is not formless since instinctive behaviour has been moulded by natural selection in nice adaptation to biological ends which we, who have knowledge of normal routine, may foresee. It is purposive, though not, *qua* instinctive, purposeful. The solitary wasp digs a nest, stores it with grubs on which she lays her eggs, and closes the opening. But in this case, as Mr. Stout says, "she knows nothing of what is going to happen after the deposition of the eggs, and the needs and habits of the larvæ are quite different from her own"; and he adds in somewhat metaphorical language: "It is not she who provides for the future, but nature, which uses her as an instrument to that end" (p. 338).

Assuming, then, that at this early stage of psychological genesis (and it is perhaps a questionable assumption) there is some differentiation between appearance and acquaintance therewith, we have, on the hypothesis so far formulated, presented appearances and awareness of phases of behaviour, given in serial sequence—and that is all the psychological stuff there is in the purely instinctive business as analytically distinguished. We have just a sequence of Pb's, with associative relatedness in the making or being established. I think it is not unusual to speak of the making or establishment of associations as "learning by experience," and to

speak of subsequent revival, in virtue of the associations so formed, as the psychological basis of "profiting by experience". No doubt at a higher level of mental development the phrase "learning by experience" has reference to a process in which intelligence in large measure co-operates. No doubt, therefore, even at this level the phrase may seem to carry the implication that intelligence must be present. It should be clearly understood, therefore, that, in our present connexion, learning by experience means no more than the establishment of associations. That is "what takes place when the process of learning by experience actually goes on" (p. 350). And that is essentially what takes place in all subsequent cases of learning by experience. Associative relatedness is in the making. It may be said that the establishment of associations is itself the work of intelligence. But is Mr. Stout prepared to urge that this is so. He himself tells us in the *Groundwork* that "it is most important to remember that association does not stand for any actual psychical process. . . . Association is an acquired connexion of dispositions, and like the dispositions it is formed in the course of conscious experience and it is a condition determining subsequent conscious experience. But as the dispositions themselves fall outside of conscious experience so their union falls outside of conscious experience" (p. 60). If I rightly understand this passage it lends no colour to the view that the formation of associations is the work of intelligence, unless it is implied that only in the course of conscious experience as intelligent can associative connexions be formed.

When associations have been formed so as to link the data within an instinctive sequence, revival is rendered possible. That which is so revived is comprised under the head of (secondary) meaning. The value of such meaning is that it so qualifies the original presentations as to make them on the second occasion other than they were, by themselves and unqualified, on the first occasion. They are raised to the perceptual level A *conditio sine qua non* is the repetition of sequence or part of sequence. Without that there could be no profiting by experience. Such a qualified presentation may be symbolised as P*m*. This again is followed by B. But since the previous B was sequent on P whereas this is sequent on P*m*, this new B is correlated with a different predecessor, and is itself so far different. Let us call it B′. Then P*m*B′ is the formula for intelligent behaviour as experienced, and serves to define it in contradistinction to PB the formula for instinctive behaviour as experienced in naïve awareness. This differs, I think, from Mr. Stout's charac-

terisation when he says that "intelligence involves some cognisance of an end pursued" (p. 349). That of course is a true characterisation of a wide range of human intelligence. But though the meaning which observers of sequences repeated with a difference infer to be present as qualifying the presentations has for them prospective value, this involves the analysis of P*m* into P and *m* so that, for them, the *m* has distinct reference to what is yet to come. It is perhaps hazardous to deny that, at the inception of intelligent behaviour some dim prospective reference is present, yet it may be questioned whether it need be present. It may be claimed that it suffices for psychological interpretation to regard the actually existent P*m*—the qualified presentation—as the precursor of B′—the modified behaviour—without anything so complex as prospective reference.

I have sought analytically to distinguish, and to characterise, that which, on this view, is to be regarded as instinctive, and that which is to be regarded as intelligent—both terms qualifying a behaviour-situation as experienced. But, as has already been indicated, most of what are popularly regarded as illustrations of instinct in animal life are blends of instinctive and intelligent behaviour. The original performance which was predominantly of the PB type is modified by more or less of acquired meaning. The bare presentations have ceased to be existent entities when there has been any extensive commerce with the normal environment. They have all acquired meaning. All the PB business has been raised to the higher level of P*m*B′ business. That is so in large measure. But the P*m* is itself in a sense a blend. It is a unity with inseparable but distinguishable factors. Let us however fix our attention on the behaviour. It is modified behaviour. There remains some measure of correlation of the original PB type and there is added some measure of correlation with meaning as acquired. The problem is to estimate, as best we may, the relative values of the one and of the other. Statistical methods may, some day, be divised which will furnish the required correlation coefficients. As it is we are for the most part dependent on more or less probable opinion. When a moorhen dives for the first time in its life I am disposed to rate the value of the direct heredity-correlation as very much higher than the value of the correlation with acquired meaning due to previous other-use of the same limbs and muscles in other life-situations. The dive, *qua* dive, seems to me to be, for the most part, interpretable in terms of PB; but I fully admit that the total presented situation has some meaning begotten of prior

experience. On the other hand Dr. Myers, as I understand him, assigns to the Pb element—if he admits such an element at all—a much lower value. So the answer to the problem, analytically considered, remains undecided. The point is, however, that, on the hypothesis under consideration, in perhaps all examples of what is popularly called instinctive behaviour, there is this two-fold correlation, there is so much instinctive warp and so much intelligent woof. The question is, in each case, how much?

The interpretation of instinctive behaviour and instinctive experience, a brief sketch of which has now been given, is admittedly based on the assumption that meanings are not inherited. That assumption may however be criticised; it is rejected by Mr. Stout; and the counter-assumption is made that meanings are inherited. It is clear that on the latter assumption the whole theory of instinct as above formulated must be subjected to drastic revision.

The essential feature which distinguishes the interpretation of instinct on the second assumption, is that we start with a P*m*. The meaning which qualifies a presentation has not to be acquired solely in the course of individual experience; there is always, whenever the term instinctive is properly applied, some qualification by meaning from the outset. Hence if we regard P*m* as a formula which symbolises the percept, there are inherited percepts, in the sense that there is a congenital linkage within hereditary dispositions such that a given presentation calls up a meaning prior to any direct experience of such meaning through further presentations. Thus, according to Mr. McDougall, "we must regard the instinctive process in its cognitive aspect as distinctly of the nature of perception however rudimentary" (*Int. to Soc. Psy.*, p. 28). And he holds that, in exceptional cases, it is not very rudimentary. "The construction of such nests [as those of the weaver birds of Southern India] seems to me," he says, "to imply on the part of the birds . . . innately conditioned representations of the form of the nest" (*Brit. Journ. of Psy.*, vol iii., p. 252). This seems to suggest an inherited image which serves as a model which the weaver bird copies. If I rightly understand him Mr. Stout does not go so far as this. In his treatment the inherited meanings are vague and ill-defined. Still there they are. "Thus, in the first performance of an instinctive action, there will be a rudimentary conation or active tendency directed towards an end which is an end for the animal itself, and does not merely appear as if it were so to the external observer. It is true indeed that the animal will initially have no anticipation of the special means

by which the end is attainable, or the special form which it will assume when attained. Only experience of results can yield definite prevision of this kind" (pp. 355-356).

We have then, on this view, a new psychological task—that of differentiating between the meaning which is inherited and the meaning which is acquired. We must distinguish between, say, P*m'*, the presentation with inherited meaning, and P*m'm*, where there is a further qualification through the meaning which is acquired in the course of individual experience. We have, so far as is possible, to assign specifying characteristics and relative values to *m'* and to *m* respectively, whenever, in later life, both are present. It is one of the merits of Mr. Stout's able discussion that he attempts to do this. And though the distinction comes to little more than the relative vagueness and short range of the one, contrasted with the greater definiteness and longer range of the other, still that is a helpful guide to discussion; and that perhaps is as much as can be expected in the present state of knowledge or opinion.

There can be little doubt that the instinctive behaviour of animals seems to imply—and by the majority of people is held to imply—at any rate some prevision of what the instinctive behaviour is leading up to. To take one somewhat complex example; the careful observations of Mr. Eliot Howard on the warblers go far to show that the male birds reach England in the spring before the females, and that they then proceed to establish a "territory," into which other male birds of the same species are not allowed to enter. Now many of the males are young birds which have never yet mated. But the establishment of a territory is preparatory to mating. And the whole elaborate behaviour seems to imply prevision of the arrival of some female as a prospective mate, though of such coming of the hen birds and of mating with one of them there has been no previous experience. It is almost impossible to describe the facts as observed without giving expression to what is thus supposed to be in the mind of the male bird, as itself expectant of the further developments which we, who know the routine of bird-life, so confidently expect. Those who are cautious in their interpretation are perhaps content to say that the bird in establishing a territory behaves as if he knew that a female, to be in the future his mate, would ere long arrive to satisfy one of the most imperious cravings of his nature. But then it is hard to stop at "as if"; and so many "as ifs" are misleading. The ammophila behaves as if she knew what will take place in her nest after she has closed the opening. No

doubt she may have such knowledge; but if so it is gained in a manner which is at present psychologically inexplicable. Many of the higher animals behave as if they were capable of quite elaborate processes of reasoning; but in a great number of cases the facts can be explained as the outcome of psychological processes much lower in the scale of mental development. And, in my judgment, if they can be so explained, they should be so explained. We have to be constantly on our guard against what Mr. Stout calls "the besetting snare of the psychologist—the tendency to assume that an act or attitude which in himself would be the natural manifestation of a certain mental process must therefore have the same meaning in the case of another" (p. 49). With his own warning in mind, we have, I think, to be on our guard when he tells us that "animals in their instinctive actions do actually behave, from the outset, as if they were continuously interested in the development of what is for them one and the same situation or course of events; they actually behave as if they were continuously attentive, looking forward beyond the immediately present experience in preparation for what is to come" (p. 351). No doubt they do. No one dreams of denying these "as ifs". But we may not pass lightly from "as if x were present" to "the presence of x". I do not assert—I do not wish even to hint—that Mr. Stout fails to give the reasons, based on general psychological principles, which, in his opinion, fully justify the passage from the one to the other. The question is whether his argument carries conviction — whether the affirmative answer he gives to the question which I have placed at the head of this article is to be accepted or rejected. If it be accepted, and if some measure of prevision, dim or clear, be a mark of intelligence, then it follows that "instinctive behaviour is essentially conditioned by intelligent consciousness" (p. 357). For if inherited meaning (m') be congenitally linked with initial presentation (P), and if such meaning be prospective, it is clear that instinctive behaviour should be regarded as originally intelligent, since it is, *ex hypothesi*, "directed to an end which is an end for the animal itself".

Coming now to closer quarters with Mr. Stout's contention, "the important point is that," when the animal is behaving instinctively, "the situation is apprehended as alterable" (p. 355). That is a characteristic feature of inherited meaning; and that, in itself, renders instinctive behaviour intelligent *ab initio*. The exact significance of the words "apprehended as alterable" needs, I think, further elucidation. Reverting to the assumption that meanings are not

inherited, it is sufficiently obvious that situations are, as a matter of fact, in course of alteration during the progress of instinctive behaviour; and it is admitted that there is, in a sense, awareness of alteration as it comes. The phrase is perhaps a little ambiguous. There is, of course, awareness of the altering situation. But there need not be apprehension of the situation *as altered*, still less *as alterable*. The latter seems to me a somewhat complex form of cognition; and I question whether it is present in the mind of even the most intelligent animal. But I am probably reading into the expression "apprehended as alterable" more than Mr. Stout wishes to convey. I must remember that, as he well says, "human language is especially constructed to describe the mental states of human beings, and this means that it is especially constructed so as to mislead us when we attempt to describe the workings of minds that differ in any great degree from the human" (p. 50). Seeing that Mr. Stout regards prospective reference as relatively vague since only experience of the results can yield definite prevision; seeing that his main contention is that "the rudimentary reference to the future is not wholly indeterminate"; we may perhaps substitute for the words "apprehension of the situation as alterable" the words "undefined expectancy of coming difference". I an not sure that this will adequately express what Mr. Stout has in mind; and I have no wish to give anything but full value to what he conceives to be a leading (perhaps the leading) characteristic of inherited meaning. In any case we are told that "the prospective attitude of mind may consist merely in looking for further development of the actual situation without forestalling the special nature of the development" (p. 355). If then we agree to speak of the coming difference which is indefinitely expected as an end, the animal "may be pursuing a proximate end, though it is blind to more remote consequences, which appear to the onlooker as ends fulfilled by its action" (p. 352).

On congenital attention and interest, in some sense of these words, Mr. Stout rightly lays stress. But what sense? That hereditary relationships obtain between cats and mice or small birds, between spiders and flies, between rabbits and lettuces or carrots; that throughout the whole range of life there is the closest and most intimate correlation between heredity-relatedness and relatedness to the environment; that the direction of attention and interest is predetermined by the constitution of the organism; such facts and inferences are not likely to be denied by any one. But here again I must harp on the same string and ask whether we should not be on our guard against reading into the attention and

interest of the animal, when it behaves instinctively, too much of what these terms signify in the mental life of human adults. In discussing attention the psychologist generally has in mind a fairly high level of mental development. At this level he is unquestionably right in emphasising unity and continuity of interest directed towards a definite end. Here "all attention is, in a sense, expectant or prospective. In seeking the development of our object we look forward to the appearance of new features and relations belonging to it, which are not yet apprehended" (p. 159). Here movements of adjustment in fixating the object of attention presuppose interest in that further and fuller cognisance of the object which is the end in view, though the nature of what is thus cognised is only revealed when this end is attained. Here therefore attention is distinctly conative in so far as there is striving towards some prospective end; and conation is attentive in so far as there is selective focussing on what is contributory to that end. But may there not be a far earlier state of matters, at the dawn of conscious awareness, when the germ of attention is predominantly of the PB type, and when the germ of interest is the glow of satisfaction which accompanies the normal PB or sequence of PB's? In the human infant an early indication of something, very rudimentary, of the nature of attention and interest, in this sense, is presumably present when, apparently long prior to the focussing of vision, the gaze just clings to a gleaming surface not too brightly illuminated. It does not seem necessary to assume, in this case, the presence of any prospective reference, however dim. When an infant, hearing a strange sound, ceases to be restless and assumes what we call an expectant attitude, we perhaps say that surely it is expectant of something which will follow, though what that something will be it is for the future to decide. Such are no doubt the appearances; but appearances may be deceptive; or rather what we infer from the appearances may perchance be false. There may be only something very rudimentary of the nature of surprise—though the word surprise carries with it, for us who use it, too much of prospective meaning. We live in a world of meanings; and that makes it hard for us to interpret infant behaviour in psychological terms.

Let us however return to the animal. Its "whole behaviour throughout the course of an instinctive activity even on it first occurrence, shows all the outward characteristics of attentive process. . . . It is throughout pervaded by the attitude of waiting, watching, and searching for future impressions. In this respect it is sharply contrasted with the mere reflex. The reflex reaction occurs when the stimulus

is applied as a loaded pistol goes off when the trigger is pulled. It is not prepared for by previous activity. Until the appropriate stimulus occurs the animal remains passive. On the other hand, the bird gathering materials for its nest, ants tending eggs and larvæ, a cat or a crab lying in wait for prey, take the initiative, so to speak, and go out to meet coming impressions" (p. 344-345). Now so far as behaviour is "prepared for by previous activity" we have, I take it, acquired meaning which supplements and may materially modify inherited meaning, if that also be present. It is difficult analytically to distinguish the one from the other. But that the animal does, in a sense, "go out to meet coming impressions" may be freely admitted even on the PB hypothesis. On that hypothesis all the truly initiative part of the behaviour is due to the acquired meaning which, after some commerce with the environment, is always present in greater or less measure. Apart from this, for which due allowance must always be made, the question is whether the animal, *qua* instinctive, is driven forward to meet the new impressions blindly, in virtue of its inherited organic constitution, just as the babe in the womb is driven forward through many complex stages and phases of development till it is brought to the birth in fulfilment of what are metaphorically spoken of as Nature's wise purposes; or whether it consciously goes forth to meet them in fulfilment of some dim purpose of its own. Who can answer this question with any measure of assurance?

With regard to the main issue, although I am not prepared to deny the presence of inherited meaning in some cases, I still have some hesitation in accepting it on such evidence as we now have, even backed by the general considerations which Mr. Stout adduces. If I provisionally accept it, I am disposed to accentuate all that Mr. Stout says as to its vague and indefinite nature—probably to go a good deal farther in this direction than he does. Even if some dim preperception, such as I admitted in *Instinct and Experience* as possible, may perhaps be inferred from the facts, when they shall have been more searchingly analysed, I have yet more hesitation in speaking of prospective reference. At the instinctive level reference to past or future of such meaning as there may be is, I think, quite beyond the capacity of the animal, though within its present experience there may be incipient differentiation of what is just coming in from what is just going out. Seeing then that I am forced, as at present advised, to whittle down inherited meaning to such very attenuated proportions, I need scarcely add that its presence or absence does not seem to me to aid us much in the interpretation of psychological problems.

II.—PSYCHIC FUNCTION AND PSYCHIC STRUCTURE.

By Henry Rutgers Marshall.

I.

As I sat yesterday afternoon in a small company listening for an hour or more to a wonderful rendering of the work of some of the musical masters, I found myself calling to mind the attitude of certain thinkers of our day in relation to introspective study with which I had been impressed a few days before by the remarks of a well-known professor of philosophy, and of an equally prominent professor of psychology, who had joined in arguing that the method of introspection had yielded all of value it could be hoped to give to philosophy and to psychology; and that, if we were to look for advance, our attention should be fixed upon what they chose to call functional psychology, our studies being concentrated upon behaviour.

The remembrance of this discussion held my attention as I considered that at the moment I was perfectly quiescent, *i.e.* was not giving to an observer any evidence whatever of behaviour or of functioning, while nevertheless my life of experience was full and significant. Nor could I but believe that the same was the case with those around me. During the whole performance of a Brahm's quintette, the eminent musical critic seated near me moved but once, and then during the pause between two of the movements. The skilled pianist by my side displayed no observable change of behaviour, unless the sparkle of her eye, and the flush on her cheek could be described in these terms.

I found myself wishing, as one often does, that it were possible for the moment to be these others; to discover what their experiences really were, and to hold them in memory for comparison with my own. I knew that the critic who has given his whole life to the study of music must be finding in his experience something that was not in mine; and that the pianist must in like manner be thrilled in ways that

neither the critic nor I could know. At the very close of the *finale* I found in my experience a questioning attitude relative to the perfect accuracy of the interpretation of the master's meaning. Without a word from me the pianist said in an apologetic tone, "Well! the execution of that final phrase is exceptionally difficult," and I felt at once that in a measure I knew of her experience; and yet only in a measure; for what had been a questioning with me, was knowledge for her.

Thus again it was borne in upon me, as it had often been before, how paltry and insignificant a part of the experience of men is interpretable in terms of those human movements which are similar to the behaviour observable in the animals by which alone we judge of their experiences; and how deeply important is the study of our own inner experiences, and their interpretation in verbal terms which enable us in some degree to communicate their nature to one another. And then again my thought recurred to the philosopher who told me that little of value was likely to be gained by further attempts to analyse our conscious states: and to the teacher of psychology, who told me that he had come to look upon the study of behaviour as the most significant work the psychologist could engage in.

I would not for a moment be understood to under-estimate the value of our modern investigations of behaviour, for I believe them to be of very great scientific importance. I would, however, emphasise the fact that these studies of behaviour are primarily biological, and only incidentally psychological; and that they usually involve teleological assumptions or implications which are foreign to the strictly psychological manner of thought.

That the philosopher and psychologist above referred to are representative of a large class of serious students who overlook this fact is evidenced by the methods of procedure and forms of argument in current use by writers of authority in the fields of so-called "Animal Psychology" and "Comparative Psychology". And the influence of the conceptions thus entertained and enforced is clearly seen in the bold statements made by some of our ablest neurologists and biologists, whose investigations are dependent upon the observation of the functioning of animals, to the effect that psychology must in the end be treated as a branch of biology.

That this shifting from the field of psychology to that of biology is not appreciated is perhaps bound up with the fact that the phrase "functional psychology" is taken over from the vocabulary of introspective psychology, while the word function in the phrase as used is given a special meaning not

originally belonging to it. Stout and Baldwin[1] speak of the "classification of the mental functions" as the "distinction of the fundamental constituents of every concrete state of consciousness". They evidently use the word function in this definition to refer to characteristics observable only in introspection; and the word as thus employed has a very different meaning than is given to it when the modern student of behaviour speaks of functional psychology, for he refers to facts which have significance in the observation of the realm of outer world objects.

The changed meaning of the phrase is perhaps to be traced to the modern emphasis of the psychic correspondents of motor reactions, which are significant in connexion with the studies of both introspective functional psychology, and of modes of behaviour; this accounting for the fact that the student of behaviour still speaks of himself as a psychologist, although he has really become a biologist of a certain special type; *viz.* one who is not content merely to correlate objectively observable facts of behaviour, but who for purposes of interpretation makes use of certain metaphysical assumptions as to the correspondence of this behaviour with consciousness.

That some of our psychologists and philosophers should have been tempted to take the position above referred to is perhaps to have been expected. The natural man does not find it easy to make the distinction between the stream of his mental life and the stream of objects in the outer world; nor easy in his thinking to cling to the mental stream when once it is distinguished: and the philosopher and psychologist, being for most of the time natural men, are very ready themselves to forget the distinction; a tendency which has been greatly fostered by the modern development of psychophysics, and especially by the attention given of late to the relation of conscious experience to motor response, and to functioning within the nervous system, of which I speak below. The modern concentration of thought upon efficiency, which in the philosophical field is reflected in the present day pragmatic movement, must surely also be recognised as a factor in the movement of psychological thought here considered.

Thus it happens that the majority of those modern students of behaviour, who still call themselves psychologists, have really abandoned the study of mental life. Their attitude is apt to be that of one who, having become discouraged by the difficulties met in the study of an intricate science, persuades himself that the study of this science itself is really not

[1] *Dictionary of Philosophy and Psychology*, vol. i. p. 188.

important. Their belittlement of the value of structural psychology, and their emphasis of the value of what they call functional psychology, thus actually amounts to little more than an acknowledgment of loss of interest in the study of psychology itself, and an expression of opinion that this study is worth while only so far as it can be shown to have direct practical application; they thus representing in this field that broad class of men whose thought is always turned to the attainment of observable results, who in our day would encourage no research unless it can be shown to bear relations to applied science, and who would even aim to displace the humanities by the practical sciences in our university courses.

It may perhaps be said that I am giving too narrow a meaning to the words function and behaviour as employed by those who defend such a position; that they are intended to cover functioning and behaviour within the organism, that are inferred, but not observable. But evidently this very inference itself involves introspection; and it is therefore clear that, if these terms are thus used, the arguments intended to discredit introspective study can have no weight.

In writing for the readers of MIND I do not need to present any argument in opposition to the view here referred to. We see that what the student of behaviour has commonly in mind when he refers to functional psychology should more properly be spoken of as the study of behaviour as elucidated by psychology; that it is really not a branch of psychology at all, and therefore cannot properly be contradistinguished from structural psychology.

II.

Structural psychology may however be contradistinguished from what we have seen above is quite properly called functional psychology, but which, in order to avoid misunderstanding, I shall speak of in what follows as 'process psychology'.

As it is possible that the contentions in reference to the relative merits of the two methods of study involved is by some intended to refer to structural psychology as contradistinguished from what I thus call process psychology, it will be well perhaps to compare the two; although I may state at once that I can see no ground whatever for discrediting either one of these methods. Any careful consideration of the development of the sciences that have become so significant in modern intellectual life, must convince us that the study of process and the study of structure must go hand in hand; each advance made by either mode of study being

suggestive to those whose thought naturally turns them to the contrasted mode. And if this is true in general, it certainly is likely to be true in relation to psychology; and therefore instead of raising questions as to the relative merits of the two methods of study referred to, we should rather ask whether process psychology has adjusted itself to advances in structural psychology, and structural psychology to those of process psychology; and whether psychology is advancing by an adequate correlation of the data gained by these diverse modes of approach.

The sciences have in general sprung from beginnings which involved little more than the cataloguing of certain striking characteristics discovered in the study of objects which happened to interest the observer; and the development of these sciences has been invariably retarded by the concentration of effort upon attempts to correlate these specially marked characteristics, and to explain others of a less striking nature as derivatives from their combination. The sciences have developed into effective instruments only so far as they have freed themselves from the limitations of this method; and, deliberately turning attention from the characteristics that are most easily discerned, have searched for more fundamental laws of which these characteristics are merely emphatic exemplifications.

Such being the case it is but natural that we find the same procedure exemplified in the relatively modern development of mental science. And yet it cannot but be a matter of some surprise that, with the example of the more prominent sciences before them, the modern psychologist has stepped so little beyond the initial stage above referred to, and has remained content until very lately to limit his attention almost exclusively to the study of those mental forms which happen to be most emphasised in his experience: as becomes clear when we consider the methods of structural study, to which we shall first refer.

Our mental life, as distinguished within experience from the stream of objects in the outer world, is called to our notice most prominently by the appearance of vivid sensations, which at times persist quite apart from the persistence of the outer world objects with whose existence their initiation is bound up; and it is but natural that the earlier psychologists should have been led to look upon these sensations as of pre-eminent importance in connexion with the comprehension of the nature of mental life as a whole. It would seem however that such a mode of approach should long since have been

seen to be unlikely to lead to satisfactory results; yet that this has not been perceived is clear in the fact that the atomistic sensationalism of the Associationists held such complete control as it did until the last generation; and that notwithstanding its acknowledgment of bankruptcy[1] in the "mental chemistry" of John Stuart Mill, it still remains in control of the modes of study adopted by not a few of our best known psychologists; as is evidenced in their published works, and in the large proportion of the time given by psychophysical students under their direction to the study of the sensations, and of the structure of the sense organs.

The modern concentration of thought upon the various aspects of behaviour, above spoken of, has indeed turned attention to the study of the phases of our conscious life which accompany our motor reactions; phases which in our experience stand next to the sensations in the order of prominence: but in the main the structural psychologist has adopted, in relation to these emphatic experiences, the same crude method to which he had become habituated by the teaching of the sensationalists. He has however not succeeded in making a better showing than these latter; who, far from from being driven from their position, have turned their efforts rather to attempts to express these motor consciousness states altogether in terms of "back stroke" sensations: attempts which have not been sufficiently convincing however to be wholly acceptable to any but those who are predisposed toward the sensationalistic doctrine.

The unsatisfactory nature of the results obtained by this concentration of attention upon sensations and upon motor experiences has however been tacitly, if not always openly, acknowledged by the best of our modern psychologists; who, convinced that the fundamental weakness of the associational theory lay in its psychological atomism have almost with one accord agreed that this atomism must be abandoned in favour of the view that consciousness is a psychic system, rather than an elaborate combination of isolable psychic elements. It is interesting to note however that notwithstanding this theoretical rejection of psychic atomism, few of the leading psychologists of the immediate past have actually avoided altogether the atomistic conceptions impressed upon them by the masters of the earlier generations from whom they necessarily learned in their youth; and this should put us on our guard lest we in our day also fail in this regard, and should lead us to turn our attention the more seriously

[1] *Cf.* Stout, *Manual of Psychology*, p. 110.

to the interpretation of the structural forms observable in reflexion, in terms of this systemic conception.

When we turn from the consideration of structural psychology to that mode of approach which I speak of as process psychology, we find the same crudity of early thought, and the same slowness to adopt a more fruitful method.

The tendency of thinkers to postulate a special process to account for each very noticeable form of mental experience has been evidenced from the earliest times. It has withstood many an attack, and has come down even to our day in the scarcely yet dislodged "faculty psychology". The attention of the early Greek philosophers was indeed called to the very notable processes of intellection and conation, and attempt was made by them to subsume all other processes under these two; a mode of thought which became so fixed by the powerful influence of Aristotle that it held almost complete sway until the middle of the eighteenth century. This conception lost its hold finally through the influence of Kant, who followed his immediate predecessors in insistence that a third process of "feeling" has as much right to recognition as intellection and conation; and to this day the majority of philosophers accept cognition, feeling, and conation or will, as mutually exclusive, and as satisfactorily covering all modes of psychic process. In our time, however, Brentano has led a revolt against this Kantian position, holding that "feeling" should be considered as an aspect of conation, but adding in place of it, as a third fundamental process, that of judgment or belief: and proposing as a principle of division, the different modes in which consciousness may refer to an object, as being pleased with it, desiring it, remembering it.[1] Stout has followed Brentano; recognising however that such a mode of consideration is not wholly satisfactory, as it deals only with the modes in which consciousness refers to an object, and makes no allowance for the possibility of conscious experience without objective reference.

The recognition by Stout of this limitation is important, for it brings out clearly the inadequacy of the method of study which is guided by the fixing of attention primarily upon what is emphatic in experience; and leads us here again, as we have been led in relation to structural psychology, to ask whether the process psychology of the present day has been correlated with the conception of the systemic nature of consciousness now so generally accepted: a question to

[1] *Dictionary of Philosophy and Psychology*, vol. i., p. 188.

which we shall return after we have considered briefly certain implications of this systemic conception itself.

III.

It may be noted in the first place that although this conception of the systemic nature of consciousness has been reached by introspective study, it gains greatly in significance when it is considered in connexion with the fact, of which we have convincing evidence, that the consciousness of a given moment corresponds in some manner with the activities in the same moment of some part at least of the individual's nervous system, to which part I shall mean to refer in what follows whenever I speak of the nervous system.[1]

The specific sensations which have attracted so much attention in the past are a special type of what we may speak of as specific mental items.[2] They are known to appear in correspondence with certain special activities in special parts of the brain part of the nervous system; and it is generally assumed that all other recognisable special mental items,—*e.g.* emotions, images, thoughts, etc.,—correspond also with special activities in special parts of the nervous system.

But it is generally agreed that all nerve substance is in some measure active as long as it is alive, and it thus appears that what we thus speak of as special activities in special parts of the closely correlated nervous system are really more correctly described as emphatic activities within an all-active nerve system; or what I find it convenient to speak of as *neururgic emphases*. Beyond this, inasmuch as the nervous system is highly complex, and is stimulated to activity in each moment from many sources, these neururgic emphases never stand isolated and alone, but each appears as part of what we may speak of as a *neururgic pattern*.

Correspondingly, when we turn to the nature of our conscious experience, we discover that, however emphatic any special mental item may be, it never appears in actual isolation; not even the most punctual of sensations, *e.g.* a pin prick, can be experienced apart from a somewhat more of con-

[1] I make this limitation to avoid controversial ground. As I have shown in my *Consciousness* there is much reason to believe that some form of psychic existence corresponds with all nerve activity, and indeed with all the activities of life.

[2] I use this term in place of the usual term presentation, because I wish here to avoid the implication that a somewhat exists to which these mental items are presented.

sciousness than itself. And we are thus led to see that as each special nerve activity may be described as a neururgic emphasis within a neururgic pattern, so each specific mental item of which we become aware may be described as a *psychic emphasis* within a *psychic pattern.*

If we accept the hypothesis of correspondence above referred to we are led to certain other positions which relate directly to the subject before us.

1. We have evidence that the activities of the whole nervous system are fundamentally of the same nature throughout; and we are ready to agree that the neururgic emphases appearing in certain parts of the nerve system displays the neururgic characteristics of the whole system. 2. We are also led to believe that all parts of the correlated nerve system are reciprocally efficient: that is to say, each marked neururgic emphasis must effect the whole neururgic situation of the moment; and this marked neururgic emphasis in turn must be what it is because of the influence upon it of the neururgic situation in the system apart from the marked emphasis.

Correspondingly we should be prepared to hold (first) that consciousness is of the same fundamental nature throughout; and that the psychic emphases, or mental items of which we are aware, display the characteristics of the whole psychic system. And (second) that all parts of consciousness are reciprocally efficient: that is to say, that each psychic emphasis must affect the nature of the whole of the consciousness of the moment in which it appears; and that it in turn must be what it is because of the influence upon it of the rest of consciousness of the moment.

When we consider the points thus made we at once perceive that what at first sight appear to be diversities of neururgic process may be interpreted in terms of one fundamental process manifested in different neururgic forms: the nature of these diverse forms being determined by differences of neururgic emphasis within the all-active nervous system.

Correspondingly then we should expect to discover that what have appeared to be diversities of psychic process are really diverse manifestations of one fundamental process; and that the apparent diversity of process is due to the fact that its manifestations are given by differences of psychic emphasis within the consciousness of the moment.

That such a view is warranted appears at once probable when we note that, as a matter of fact, the apparently diverse mental processes, referred to in Division II. above, are all

evidenced by just such special psychic emphases. What we know as the process of cognition is evidenced by the appearance of the mental items which we describe as sensations, and percepts, and images, and thoughts, etc.; conation by those which we call desires, impulses, and will-acts; "feeling" by the sense of a vague somewhat that welcomes and rejects, and which often develops into and is never separable from, that very significant mental item which we call the efficient empirical ego; belief by the appearance of the relational "reality feeling" (Baldwin), or sense of realness as I prefer to call it, in conjunction with the appreciation of the efficient empirical ego.

This view that we are dealing with a single psychic process which is diversely manifested, is corroborated when we view the matter from another standpoint. The fundamental neururgic process appears to involve a transfer of energy through each element of the all-active nerve system, each element being receptive of a stimulus, and reacting upon what is beyond itself. The receptive phase of this process is more noticeable than the reactive phase in certain parts of the nerve system, and in others the reactive phase is more noticeable than the receptive: but this does not blind us to the fact that each elementary nerve activity points back to what brought it into being, at the same time that it points forward beyond itself.

Correspondingly we may hold that the fundamental psychic process always points in two opposite directions. That the receptive pointing is what we know as the cognitive process, and is distinguished clearly in connexion with certain mental items in connexion with which the reactive pointing is not evident. That in like manner the reactive pointing beyond itself is what we know as the conative process, which is distinguished clearly in connexion with certain other mental items in connexion with which the receptive pointing is not evident: this reactive pointing being especially noticeable in connexion with the will-act which accompanies the break-down of an inhibition of two incompatible conative tendencies.

We are thus led to hold that the older Aristotelian conception of psychic processes has greater validity than those of more modern times; but that it cannot be interpreted to mean that cognition and conation are diverse processes; they being merely diverse aspects of one fundamental process.

IV.

The fact that the evidence of psychic process, as thus considered from the systemic standpoint, is given only in the observation of special types of mental items, indicates at once the prime importance of the study of structural psychology also in the light of the conception of the systemic nature of consciousness.

This becomes the more evident when we recall the fact, above referred to, that the mental items we appreciate are really psychic emphases within mental patterns; for this makes it clear at once that a search for atom-like psychic elements is futile; inasmuch as what we think of thus as elements can never be isolable existents, but must really be merely more or less marked forms of psychic emphasis within the broad psychic system that constitutes the consciousness of the moment considered.

This view we find corroborated moreover when we note that each of the neururgic emphases, and each of the neururgic patterns, with which they are supposed to correspond is *sui generis;* and are thus led to expect to find that each psychic pattern, and each mental item within such a psychic pattern, is also *sui generis;* an expectation which, in my view, careful introspective study shows us is fulfilled.

This fact that each mental item is found to be *sui generis* is important in another direction; for if this is the case then it at once becomes evident that no mental item can be looked upon as the resultant of the summation of, or combination of, mental elements, as the older associationists held was the case. We see rather that while diverse psychic emphasis, say *a* and *b*, appearing coincidently, must produce a resultant emphasis *c;* this resultant *c* must necessarily be diverse from *a* and *b*.

We thus find an explanation of the nature of many mental items of a complex form. We note that while percepts would not be what they are but for the existence of sensations, yet they are diverse from sensations: and in like manner that while perceptual concepts would not be what they are but for the existence of percepts, yet they are diverse from percepts. Thus we learn to comprehend also the mode of production of those psychic emphases which I call "senses of relation" which William James did so much to force upon our attention. As he says[1] "there is not a conjunction or a preposition, and hardly an adverbial phrase, syntactic form, or inflection of voice, in human speech, that does not express

[1] *Principles of Psychology*, i., p. 245.

some shading or other of relation which we at some moment actually feel to exist between the larger objects of our thought. If we speak objectively, it is the real relations that appear revealed; if we speak subjectively, it is the stream of consciousness that matches each of them by an inward colouring of its own. In either case the relations are numberless, and no existing language is capable of doing justice to all their shades. We ought to say a feeling of *and*, a feeling of *if*, a feeling of *but*, and a feeling of *by*, quite as readily as we say a feeling of *blue*, or a feeling of *cold*."

Thus we come to see also that as each mental item is *sui generis* and has a character of its own, all classifications of mental items are based upon the fact that the mental items grouped together arouse special forms of mental emphasis, which would not exist did not these mental items exist, but which are quite diverse from the mental items grouped. We recognise sensations as such, for instance, because, as the resultant of two or more sensations given coincidently in retrospect, there arises, quite apart from the experience of the sensations themselves, a special sense of relation which we describe as the appreciation of the existence of a special grouping. Thus again we recognise a mental item as one that is attended to, or as one that is remembered, because in connexion with it are aroused special relational mental items which may be called respectively 'attention experience,' and 'memory experience'.

V.

If we take into consideration these conceptions it seems clear to me that, in dealing with structural psychology, our attention should not, at the start, be given to the study of any special type of mental item, however emphatic it may be in experience, as has been the habit of the sensationalists; but should be concentrated rather upon efforts to determine the nature of the characteristics that are common to all sorts and kinds of mental items whether these are emphatic or not.

Such a method of approach I have adopted in my *Consciousness* above referred to; where I have aimed to show that each mental item or psychic emphasis, whatever its special nature may be, always displays (first) some measure of complexity or manifoldness; (second) some measure of intensity; (third) something of agreeableness or of disagreeableness; (fourth) some degree of stability or realness; and (fifth) some temporal qualification. In other words each and every one of the mental items that we are able to contemplate in reflexion is bound to carry with it five senses of relation which, if we

observe them, enable us to say that the mental item referred to is more or less complex; that it is more or less intense; that it is either more or less agreeable, or more or less disagreeable; that it displays more or less of stability, or realness, in relation to the rest of the mental pattern of the moment; and that it is qualified by either pastness, or presentness, or futureness.

I have attempted furthermore to show that, so far as we comprehend the nature of neural activity, these five general psychic qualities appear to correspond with five distinctive and general neururgic characteristics which themselves must always exist in connexion with any specific neururgic emphasis.

It is evident that, if each of these general qualities inheres in each psychic emphasis, then all of them must exist together in any one moment considered; although it may happen that no one of them is, or again that one or more of them are, sufficiently emphatic to be observed.

I have attempted to trace the correlation of these general qualities, showing which of them must tend to vary in emphasis directly; which of them must tend to vary in emphasis inversely; and which must vary in emphasis independently of one another.

Where they vary in emphasis independently we should expect to note the appearance of certain combinational senses of relation in case two of these general senses of relation are coincidently emphasised; and such a special sense of relation, in my view, does appear in such a mental item, for instance, as that which we may call the 'attention experience,' where an intensity is appreciated in its relation to the whole manifold of the mental pattern in which it appears; or again in that sense of relation which gives us our sense of familiarity, due to the coincident appreciation of realness, and of pastness; and in that which gives us our sense of anticipation, due to the coincident appreciation of realness and futureness.

The fact that all mental items are but emphases within a psychic system, all parts of which are reciprocally efficient, should lead us also to look for the rise of certain special senses of relation due to the appreciated correlation of (1) the senses of relation which yield the apprehension of the general qualities above referred to, with (2) the efficiency of the psychic system as it becomes explicit in that mental item which we designate as the empirical ego. And just such special psychic qualities we do observe. Thus the sense of the ego's efficiency in relation to the "attention experience" gives us voluntary

attention; in relation to agreeableness gives us interest; in relation to realness gives us objectivity and belief; in relation to familiarity gives us memory, and in relation to anticipation gives us expectation.

It would carry me far beyond the limits of this article were I to attempt to consider the application of this mode of approach in any detail. I present the above sketch of the method of study adopted with the hope that it may be considered by some who have little time to devote to the necessarily lengthy treatment given in my book above referred to.

The results thus reached appear to me to aid us in many ways in the comprehension of the nature of our mental life: but this may be the misjudgment of a man who has fallen in love with his own work. The method of study suggested however seems to me to have claims to consideration quite apart from the manner in which it is applied; and I can but hope that, if I have failed in this application, some one who is better balanced may be led to see sufficient value in the method suggested to carry it out to a successful conclusion.

III.—SOME PROBLEMS OF PHILOSOPHY.

By F. Melian Stawell.

Mr. Russell's book in the Home University Series is written for the general public; it is, of course, most able, stimulating, and brilliant; and it raises an enormous number of difficult problems that the author has not space to discuss more fully. Under these circumstances I trust it will not be thought unbecoming for a student from the ranks to put a number of questions, in however halting a fashion, with the hope of clearing the ground.

§ 1. *Physical Space.*—Mr. Russell starts his exposition by distinguishing between (*α*) the "sense-data" which are "private to each separate person" (p. 32) and which cannot well be supposed to exist without the individual mind perceiving them, and (*β*) the "physical objects,"—whatever these may turn out to be,—which it is reasonable to assume exist in a different way from the sense-data, in a way which is "independent of us and our perceptions" (p. 42). Science assumes that the knowable properties of these "physical objects" are "position in, space and the power of motion according to the laws of motion" (p. 44). The "sense-data" that partly depend on these properties may be quite different from them, *e.g.* "light" is quite different from "wave-motion". Mr. Russell goes on (p. 48): "If, as science and common-sense assume, there is one public all-embracing physical space in which physical objects are, the relative positions of physical objects in physical space must *more or less correspond*[1] to the realtive positions of sense-data in our private spaces. *There is no difficulty in supposing this to be the case.*"[1]

What does *more or less correspond* imply? If it simply means that there must be *something* over and above private perceptions corresponding *in some way* to what we represent to ourselves as "space," then, no doubt, most of us would feel no difficulty in the supposition. But if it means (see p. 49 and p. 152 ff.) that this "*something*" must necessarily have

[1] Italics mine.

"*spatial*[1] relations" as we conceive space when we allow for an observer like one of ourselves, and yet exist in complete abstraction from any such observer, then the ordinary student feels countless difficulties and much desires further light. Mr. Russell touches on one of these (p. 47) when he points out that the apparent shape of a thing differs according to the point of view of the observer. He adds "the space of science, therefore, though *connected*[1] with the spaces we see and feel, is not identical with them, and the manner of its connexion requires investigation".

I should like to press this need.

If the particular shape depends on the point of view of the observer and there *is* no observer, then there is no particular shape, and what is a shape that is no shape in particular? Or, to take the general relation of right and left, is not the direction of this relation determined in private space by the point of view of the observer, and does it not differ with different observers? (A and B stand opposite each other and an object on A's right is on B's left.) What is to determine the direction in public space if there is no observer? And in what sense are we justified in talking of a direction the direction of which is not and cannot be determined? One might answer, perhaps, that "the direction" is such that *if* there were an observer it could be determined: but does that really get us any further? Does it not come back to saying simply that the "physical" relation is *in some way* the foundation of ours?

So far as I can see that the argument has gone, the relations that maintain in the space of science, the public space, might be no more like *our* spatial relations than wave-motion is like light.

Mr. Russell seems to suggest (pp. 49, 50) that we cannot answer the ultimate questions about physical space and yet can be practically certain that we know the relations which maintain in it and which are the foundation of our private space-relations. "We can know the relations required to preserve the correspondence with sense-data, but we cannot know the nature of the terms between which the relations hold" (p. 50). In this passage "*know*," I take it, ought not to mean more than "infer with a reasonable degree of probability," and if it only means this, I cannot see that we are justified in ruling out further "knowledge" about the nature of the terms between which the relations hold. And in face of the notorious difficulties about "the continuum,"

[1] Italics original.

"Achilles and the tortoise," etc., it is hard to see how it can be denied that until such further knowledge is obtained the first must be felt to be very insecure. The trouble for the ordinary student is this: the mathematical conceptions of space seem to imply either that along these lines no ultimate explanation is conceivable, or to offer an explanation too paradoxical for acceptance. Therefore the inquirer remains haunted by the suspicion that there is more in space and space-relations than a merely mathematical conception *as such* can supply, and he wants to get hold of that "more," and cannot be satisfied until he has, and until he sees how it could be connected with the mathematical conceptions themselves.

§ 2. *Berkeley, Sense-data and the Mind* (pp. 64 ff.).—"Berkeley was right in treating the sense-data which constitute our perception of the tree as more or less subjective, in the sense that they depend upon us as much as upon the tree, and would not exist if the tree were not being perceived." Mr. Russell in criticising Berkeley's inferences from this makes the important point that this does not suffice to establish that *whatever* can be immediately known *must* be in a mind, and he draws a very useful distinction between the mental act of apprehension and the thing apprehended, which need not, so far as the argument has gone, be conceived in every case as mental. But Mr. Russell goes on (p. 65) to ask concerning such a thing as the colour of his table: "Is there any reason to suppose that the thing apprehended is in any sense mental?" He evidently means the answer to be "No," but I should have thought that on his own showing the answer in this case ought certainly to be "Yes": that the thing apprehended was certainly in one sense mental, the sense relevant, namely that the colour, as a colour, "depends on him as much as on the table and would not exist if the table were not being perceived".

§ 3. *Direct Perception and the Object of Knowledge* (chap. v.).—Mr. Russell uses the convenient phrases: (*a*) "Knowledge by acquaintance," and (*b*) "Knowledge by description".

(*a*) "Knowledge by acquaintance" stands for the knowledge of anything "of which we are directly aware, without the intermediary of any process of inference or any knowledge of truths" (p. 73).

(*b*) "Knowledge by description" stands for that knowledge where we are not directly acquainted with the object but "know truths connecting it with things with which we have acquaintance" (p. 74). Among such objects would be "physical objects (as opposed to sense-data)" and "other

people's minds" (p. 81). He adds (p. 84) that "the thought in the mind of a person using a proper name can generally only be expressed explicitly if we replace the proper name by a description". For instance, when we make a statement about Bismarck, we intend and would like to make it about Bismarck himself, an object with which, however, we are not "acquainted". But, Mr. Russell states, although we are not acquainted with it, we know there is such an entity (p. 89): "we know that there is an object B, called Bismarck, and that B was an astute diplomatist". I should have thought, so far as the argument has gone, that it was safer to say only "we have good reason for believing": but what I find most difficulty in is the "fundamental principle" given immediately afterwards on page 91: "Every proposition which we can understand is composed wholly of constituents with which we are acquainted". Unless "understand" is used in a special sense,—*e.g.* to mean "grasp *all* the bearings and implications of"—I do not see how to reconcile this with the preceding (p. 89). In the ordinary sense of the word "understand," *i.e.* "attach a recognisable meaning to," I should have thought it was quite clear that we *did* "understand" the proposition about the real Bismarck, and further that the real Bismarck was a constituent of that proposition. I suppose this opinion of mine would involve the belief that something would be "before our minds" (p. 90) with which we were not acquainted, but I do not see that this need be an insoluble difficulty (although I admit that I do not fully understand in what sense exactly it would be "before the mind"). In fact I should like to think such a belief was true, because it looks as though it might lead on to the view that the mind of man had a real hold on everything which it can think of,—on the entire universe indeed, seeing it can think of that,—and that this "hold" was capable of developing into articulate knowledge. Plato in the Theætetus seems to suggest something of the kind. But, however that may be, whenever in daily intercourse we want or intend to make a statement about an actual person, say Julius Cæsar or Bismarck, I cannot see that it helps matters at all to say that the real statement means something involving instead of Julius Cæsar (or Bismarck)—"some description of him which is composed wholly of particulars and universals with which we are acquainted" (p. 91). Because after all the essential part of the description is that it is "*of him*," *i.e. refers to* that object with which we are *not* acquainted but in which we *are* interested. It is that reference which

seems to me not only a constituent, but an essential one, in the judgment.

§ 4. *The Principle of Induction.*—This is formulated by Mr. Russell so as to allow for induction straight from particulars to particular, as well as from particulars to a general rule, *e.g.* (p. 103):—

"When a thing of a certain sort A has been found to be associated with a thing of a certain other sort B, and has never been found dissociated from a thing of the sort B, the greater the number of cases in which A and B have been associated, the greater is the probability that they will be associated in a fresh case in which one of them is known to be present".

Mr Russell says,—and I am entirely prepared to accept it, so far as the principle *thus stated* is concerned,—that "the probability of the general law is obviously less than the probability of the particular case, since if the general law is true, the particular case must also be true, whereas the particular case may be true without the general law being true" (p. 104).

But later on (p. 124) he infers from this that it is better to argue "A, B, C are mortal, therefore Socrates is mortal" than to go the roundabout way—

"All men are mortal.
Socrates is a man.
∴ Socrates is mortal".

Now the point I wish to raise is this:—

The inductive principle as stated does not seem to me, *taken alone*, to be self-evident at all. It would, on the other hand, be self-evident, *on the supposition* that there really is an intelligible essential connexion, ultimately discoverable though as yet undiscovered (see p. 166) between certain characteristics ("universals") connected with the cases in question. *If* there is such a connexion, then the one characteristic will always be accompanied by the other, and if so, then it is evident that the inductive principle is a good rough guide to the discovery: otherwise I do not see its logical justification.

This appears to be the way Aristotle conceived the matter, and the form of the syllogism was designed by him to bring out this point. I mean that, for example, we believe that Socrates dies, not because he is *Socrates*, but because he is a *man:* we believe that there *is* some connexion between the universal "man" and the universal "mortal". At the same time I quite agree with Mr. Russell that we do not see what

it is. But is it not the aim of science and of every-day inquiry alike to get on the tracks of some such connexion? Let me take Mr. Russell's witty instance of the man who has fed the chicken every day and at last wrings its neck instead, "showing that more refined views as to the uniformity of nature would have been useful to the chicken" (p. 98).

The refined views, it seems to me, would have shown the chicken that two syllogisms were formally possible:—

"All men with a disinterested love for chickens will feed them daily.
This man has a disinterested love for chickens.
∴ This man will feed them daily."

"All men who want to eat chickens will feed them daily.
This man wants to eat chickens.
∴ This man will feed them daily."

The point for the chicken was to look for something that would show which of these syllogisms was appropriate to the case in hand.

It is the search for a true "middle term," in Aristotelian phrase, for the true connexion between universals relative to the case in point, that is the vital matter. And this point seems altogether obscured if we pass straight from particulars to particular.

This question, I imagine, is closely connected with Hegel's "transition" from the categories of the syllogism to the conception of a self-differentiating Notion, a Notion accompanied by subordinate Notions, "the connexion between the first Notion and its subordinates being intrinsic" (McTaggart: *A Commentary on Hegel's Logic*, § 231).

§ 5. *The Doctrine of Universals.*—This is one of the most interesting, and most difficult, theories in the book.

There seem to be two senses in which the word "universal" is used, and I am not sure of the connexion between them.

(1) "Universality" may denote what I might call, perhaps, for want of a better word, "predicability": I mean the fact of being a characteristic that can be conceived as predicable of one particular thing or more.

This sense seems to follow from pages 143, 145, and from the distinction suggested there between certain things which are *not* universals, *e.g.*, particular sense-data as particular, individual human beings, moments of time, etc., and in opposition to these, those general characteristics represented by substantives other than proper names, adjectives, prepositions, and verbs, all of which *are* universals.

I feel this a very important distinction, and I am quite prepared to hold that no knowledge is possible without "universals" in this sense, but my trouble is that I do not see the connexion of this meaning with the other, *viz.*,—

(2) "Universality" as implying that the thing in question can be an *object of thought* and can be thought of by two different men and by the same man twice (p. 155).

For I should have thought that *in this sense* moments of time, particular sense-data, and individual personalities were themselves capable of being "universals," capable of being objects of thought in themselves *over and above* the characteristics by which we mark them out, though I am prepared to believe *not without* those characteristics.

It seems quite possible for me to think twice of the particular moment of my waking on June 4, 1909, and for another person to think of it also. When we hang a man, surely we hang *him* and not his general characteristics only, and it may be presumed that we think about him when we do it,—certainly we ought to.[1]

Even to discuss a particular sense-datum *as a particular* seems to me to imply that it is even as such an object of thought. I imagine it would follow from this that our sense-data after all may not be quite so private as we thought—(nor yet our personalities nor our moments of time)—that there may be something in them that is *communicable*, but there might be no reason to object to that. We might agree that "one man's act of thought is necessarily a different thing from another man's" (p. 155), and yet see no reason to deny that there was also an element of identity between them.

Again, it is said that "all mental facts" and "all facts concerning sense-data" have a certain "privacy" (p. 213), in the sense that no one can be acquainted with them except the person who has them. Universals, on the contrary, are said not to have this privacy, "many minds may be acquainted with the same universals". Now some of the universals in question, *e.g.*, *whiteness*, we become acquainted with (pp. 158, 159) simply by abstracting from our sense-data, *e.g.*, from many impressions of *white*. How then do we attain to this element of "universal acquaintability" if it was not already present somehow in the sense-data themselves? I should have thought that my conception of the "universal" *whiteness*, and my perception of the particular "sense-datum" *white* were, so far as communicability goes, on essentially the same footing.

[1] See § 3, *Direct Perception of the Object of Knowledge.*

I do not see how I can be absolutely certain that my "whiteness" even resembles another's "whiteness" any more than that my particular sensation of "white" even resembles his particular sensation of "white," but unless I assume in both cases that there is *some* "object," *some* common element, over and above *my* sensation and conception merely taken as such, yet which is latent in such, I do not see how communication is to be held possible at all.

§ 6. *Hypothetical Knowledge à priori.*—On page 117 it seems to be stated clearly that, although the knowledge that anything exists can only be attained by experience, hypothetical knowledge *concerning* existence *is* attainable *à priori*: "it tells us that *if* one thing exists another must exist, or more generally that if one thing is true, another is true".[1]

Again on page 132 it is said "we do not know who will be the inhabitants of London a hundred years hence: but we know that any two of them and any other two of them will make four of them".

The matter is of the highest importance, because, as Mr. Russell points out, the acceptance of this position seems to imply that we are "able to know some truths in advance about particular things of which we have as yet no experience" (p. 131), and in this sense to "anticipate experience". But later on (pp. 162 ff.) Mr. Russell seems to consider this implication not justified, and I want to know if I have understood him correctly. He seems to hold that although we can have *à priori* knowledge about the *properties* of particulars—("universals")—we cannot have it about the particulars themselves.

Now I should be quite prepared to agree that we cannot have *à priori* knowledge *involving the categorical assertion of existence* about particulars, but I find it very hard to admit that we cannot have *à priori hypothetical* knowledge about them, or that such "knowledge" is not, so far as it goes, knowledge. In short although I should agree that the *à priori* knowledge involved in our general statement about two and two being four "does not itself assert or imply that there are such particular couples" (p. 164), I yet find it very hard to admit that "our knowledge" thus fails to make "*any statement whatever* about any actual particular couple".[2]

I should have thought that although no *categorical* statement was implied, yet a *hypothetical* one was, and a hypothetical statement is still a statement. The possible, I should have thought, must somehow include all and any of the

[1] Italics original. [2] Italics mine.

actual, and the general statement must involve statements about all the possible.

I imagine, and evidently Mr. Russell agrees, that this way of putting the matter involves the belief that we could have valid thought about something (here the particulars in question) with which we are not acquainted.

Mr. Russell objects to this,—and perhaps the objection is the foundation of his theory in this chapter,—but, as I said above (see the paragraph on Direct Perception and the Object of Knowledge) I find it much more difficult to deny it than to accept it. It may indicate a mysterious ultimate union between Thought, Being, and Existence, but that might in the end prove very satisfactory.

In conclusion, to put it in concrete form, as Mr. Russell does, I find it very hard to accept the statement (p. 165) that, although "we know *à priori* that two things and two other things make four things," "we do *not* know *à priori* that if Brown and Jones are two and Robinson and Smith are two then Brown and Jones and Robinson and Smith are four The reason is that this proposition cannot be understood at all, unless unless we know that there are such people as Brown and Jones and Robinson and Smith, and this we can only know from experience."

7. *Self-evidence* (chap. xi. pp. 178 ff.).—In the first instance two kinds of self-evidence are distinguished, both concerning truths of sense-perception.

(1) The kind which "simply asserts the *existence* of the sense-datum, without in any way analysing it. We see a patch of red, and we judge 'there is such-and-such a patch of red,' or more strictly 'there is that'" (p. 179).

Now I want to ask, does this "truth" differ except *formally* from the sense-datum on which it is based?

If it in *no* way involves analysis I should think it did not. But does it in no way involve analysis? Is it clear that there is not, after all, a certain amount of analysis necessary even for the minimum "there is that," namely, the amount involved in marking it off from other sensations before, after, or along with it? Could we recognise it even as a "that" without so much analysis as this?

Even waiving this point I feel a great difficulty in the doctrine (p. 225, cp. p. 73) that theoretically we can have complete knowledge of a thing by acquaintance without knowing *any* propositions about it. Surely we must at least know that "something is there": or does Mr. Russell only mean any *other* proposition than this? If he means strictly no proposition at all, is not this knowledge of sense-

data by acquaintance an entirely dumb thing which can give no account of itself? And ought so queer a kind of knowledge as that to be called knowledge at all? This "knowledge by acquaintance" seems to come very near to F. H. Bradley's conception of "Feeling," so far as I grasp the latter, but then Bradley, as I understand, thinks that it is exactly this unsatisfactory character of Feeling that drives the mind on to real knowledge. Of course this is a vital point, and bound up, perhaps, with the heart of the Hegelian position (p. 225). As I understand Hegel, such "acquaintance" could not *be* acquaintance until it could give an account, an ultimately coherent account, of itself. To begin this it would have to make at least one proposition, and to understand that proposition fully would lead it on to the whole set.

Returning to the chapter immediately before us (c. xi.) we find a second sort of self-evidence[1] where—

(2) "The object of sense is complex, and we subject it to some degree of analysis. If, for instance, we see a *round* patch of red, we may judge 'that patch of red is round'" (p. 179). Mr. Russell points out that here we have "a single sense-datum which has both colour and shape". "Our judgment analyses the datum into colour and shape and then re-combines them by stating that the red colour is round in shape." He goes on to point out that here, and, to give another example, in the judgment—"this is to the right of that," where "this" and "that" are seen simultaneously—"the sense-datum contains constituents which have some relation to each other and the judgment asserts that these constituents have this relation".

From the passage closing the chapter (pp. 183-185) it would appear that he considers all such truths of perception as these —*i.e.*, I take it, wherever the mind is faced with a single sense-datum (simple or complex, analysed or unanalysed) and does not go beyond the sense-datum—possess that "very highest degree of self-evidence" which implies "absolute certainty".

Now in such judgments it seems natural to say that the mind *believes* the judgment it makes. But I am not sure if Mr. Russell would allow this or not. He speaks, it is true, (p. 195) of "*judging* or *believing*" as though they implied each

[1] Mr. Russell says—"perhaps in the last analysis the two kinds"—of self-evident truths of perception—"may coalesce"—and I would much like his own commentary on that statement, making it plain whether he thinks the first ought to be reduced to the second or the second to the first.

other. But on page 193 he seems to rule out from beliefs those cases where there is "a relation of the mind to a single object which could be said to be what is believed". His reason for doing this is the necessity of allowing for falsehood, because "if belief were so regarded"—*i.e.* as a relation to a single object—"we should find that, like acquaintance, it would . . . have to be always true". And obviously there are some false beliefs. Certainly I should quite agree, for the reason given, that it would not do to *limit* belief to cases where the mind was related to a single object, but, unless there are *some* such beliefs, or unless we can make true judgments *without* belief, how can we talk of such "truths of perception" as those of the first type given on page 179, where the mind is faced with a single "sense-datum"? For the rest I cannot see that there is any reason to object to the existence of certain beliefs which cannot be mistaken, *e.g.*, where the judgments do not go beyond the sense-data.

The last thing I want to do is to cavil over a verbal point, but I want to know exactly where Mr. Russell places the first type of judgments given on page 179, whether he would only refuse the term "beliefs" to them because they are so-to-speak, *above* mere belief—being certain—or whether he thinks in the last resort they would turn out to be cases where the object of belief is complex.

This brings me to the second type of judgments given on page 179, and for these also, as I mentioned, certainty seems sometimes to be claimed (pp. 183-185). But later on this certainty appears illusory: for it seems we never can know when we have got it (pp. 210-214).

What might be called the "formal condition" of infallibility is given, so far as I understand, in the paragraph where two ways of knowing any fact are distinguished, *viz*:—

(1) "by means of a judgment, in which its several parts are judged to be related as in fact they are related;

(2) by means of *acquaintance* with the complex fact itself, which may (in a large sense) be called perception, though it is by no means confined to objects of the senses" (p. 211).

Now, "the first way," it is said, "like all judgment, is liable to error". But "the second way gives us the complex whole," and the conclusion is drawn that "a truth is self-evident, in the first and most absolute sense, when we have acquaintance with the fact which corresponds to the truth" (p. 212).

This is promising, but on page 214 a great difficulty

appears. I do not see what use the self-evidence of the truth is to us unless we can know that we have got it, and I do not see how we can know this unless we know that we have the acquaintance which would ensure it, or know that unless we can be certain of the correctness of *some* judgment based on that acquaintance. Now this is exactly what Mr. Russell here says we cannot be. "Suppose we first perceive the sun shining, which is a complex fact, and thence proceed to make the judgment 'the sun is shining'. In passing from the perception to the judgment, it is necessary to analyse the given complex fact: we have to separate out 'the sun' and 'shining' as constituents of the fact. In this process it is possible to commit an error; hence even where a *fact* has the first or absolute kind of self-evidence, a judgment believed to correspond to the fact is not absolutely infallible."

What I want to arrive at is this: Does Mr. Russell believe that any truth or judgment whatsoever (implying analysis or not) that is based on sense-data and confined to them is certain or not? If not, what basis for truth have we here? And in connexion with this, another question: Does he believe that *any* judgments whatsoever are certain? I find his statements somewhat conflicting (*e.g.* pp. 112, 187, 210, 217): and if *no* judgment at all is certain I hardly see how we can talk about truth at all.

§ 8. *Arithmetic and the Universe.*

"All arithmetic can be deduced from the general principles of logic."

This is not developed here, but there is a point involved that seems so interesting I would like to set it down. In Mr. Whitehead's little book on Mathematics ("Home Univ. Series") the same position is taken and put evenmore strongly: *viz.*, that Arithmetic and generally all Mathematics, deals with the most general and abstract qualities of things, qualities that are shared by *all* things. Now in the development of Algebra, which appears as only a more convenient system of Arithmetic, handling in a more compact form the same subject-matter, certain symbols appear, *e.g.* $\sqrt{-2}$, which seem to have no significance so long as we consider things from the mere standpoint of number *irrespective of direction.* But Mr. Whitehead points out that these symbols have a significance, and are useful, if we introduce the idea of *direction*, right, left, up, down.

If this is so we seem to be faced with an important alternative. Either we have to recede from the position that Arithmetic and Algebra deal with the most general qualities

of *all* things, or we have to admit that *direction* in some sense is an inherent constituent of all things: that although when we began investigating the subject we thought that mere Number as such was all that concerned us we found that really we were concerned with a great deal more. This certainly reminds one of Hegel's transition from the conceptions of One and Many to the conceptions of Quantity, though I am not sufficiently well-read in Hegel to be sure if such was his idea. (And in this connexion I should like to ask what, if anything, might be conceived to distinguish direction *in space* from other direction, and whether Direction and Number together would not also imply Amount?) There can be no doubt that it is fascinating to the imagination, this idea that the multiplication-table might conceivably hold the secrets of the universe, and that the Eternal having once uttered the rash remark that two and two make four, was committed to the creation of the world. But I am well aware that from first to last I have been speaking of things too high for me; which I understand not.

IV.—JAMES, BERGSON, AND TRADITIONAL METAPHYSICS.

By Horace M. Kallen.

I.

Three qualities mark off the metaphysic of tradition from radical empiricism. The first is its love of "wholeness," with the consequences of system-building, of the reconstruction of the variety and multitudinousness of experience from a few ultimate elements considered precious, and therefore primordial and pervasive. The second is the designation of all things which are composed of these elements or are different from them as *appearance*, to be set over against their own *reality*. The third is the assignation to reality of a *compensatory* nature; the assertion of its homogeneity with human nature in such wise that human life and human values are, without any possible risk, by it somehow conserved for ever. Not all these traits appear simultaneously in each traditional system. Some emphasise one, some another, but all in the long run, from Platonism to epistemological Absolutism, are coloured by them.

Bergson's philosophy is so even more, for he seeks to combine all three, and his views, as we shall see, show in metaphysics, even as in epistemology, significant similitudes with great systems in the tradition,—with, for example, that of Plato, and that of Spinoza. He does offer, it is true, profound and elaborate criticisms of these thinkers,[1] but these criticisms apply rather to generalities of emphasis and to certain verbal differences, than to the concrete detail of vision and the constructive development of reality from within. In these matters Bergson, at least in *Creative Evolution*, is far closer to Plato and to Spinoza than he is to William James. For both these older philosophers the daily life is appearance and not reality. For both of them this appearance arises through the *individuation* of the

[1] *Cf. Creative Evolution*, pp. 275-370; Tr. Mitchell.

primal reality—according to Plato, through the action of the Idea conceived not as a form, but as a *power*, on non-being, or *space* (*χώρα*), so that, though in itself one, it is none the less a heterogeneous multiplicity;[1] according to Spinoza,

[1] Bergson's fundamental objection to the theory of Ideas is that it involves the assumption that though the Idea is inert and motionless, it contains more than the moving. To introduce motion, therefore, something negative, a non-being, is required, and this degrades the Idea into all its appearances, multiplies it in space and in time. This objection, which may, as we shall see, be urged with equal force against the *élan vital*, is based on a traditional but none the less erroneous conception of the Platonic Idea. The error derives partly from the mythological manner and poetic vagaries of Plato, partly from Plato's natural tendency in which Bergson participates, toward hypostasis. So that he often seems to deal with Ideas as if they were supersensible and inert essences, the models for all existences in space. But nobody who counts with the great critical dialogues, the *Parmenides* and the *Theætetus*, so sceptical and negative in their outcome, can persist in the notion that the hypostasis is Plato's real intention. These dialogues, as Campbell and Jackson have clearly demonstrated, came in the middle of Plato's career, between the greater Socratic dialogues, notably the *Republic*, and the later Platonic ones, the *Philebus*, the *Timæus*, the *Critias*, the *Laws*. The doctrine of Ideas in the *Republic* is distinguished by the elaborate mythologic form in which it is set forth; but the *Republic* is fairly rigorous beside the *Timæus*. It is hardly likely that Plato recanted and then recanted his recantation between the writing of the *Republic* and the writing of the *Timæus*. There can scarcely have been any contradiction, in Plato's own mind, between the theory set forth in the *Parmenides* and that in the other dialogues. If now we take those to be poetic expressions of the theory in the *Parmenides*, what is the nature of the Ideas?

To begin with, the Ideas are dynamic forces, a congeries of possible being, having actual existence and leading matter on, shaping it, organising it. They appear most clearly in *action*. In the tenth book of the *Republic*, Plato tells us that it is the *user* of the flute who knows the real flute. "The flute-player will tell the flute-maker which of his flutes is satisfactory to the performer; he will tell him how he ought to make them, and the other will attend to his instruction." Generically, "the excellence or beauty or truth of every structure, animate or inanimate, and of every action of man, is relative to the use for which nature or the artist has intended them". This use or function is the idea, one, indivisible, simple, the definitive form of every material organisation that expresses it or brings it about.

In the second place, its activity, taken in and by itself, is of the durational sort, and is truly creative. In terms of the myth of the *Timæus*, the goodness of God overflows spontaneously, without requiring the shock of non-being or space (*χώρα*). The latter does not degrade the Idea from its "eternity". Its *rôle* is identical with that of space in Bergson's system: it individuates and multiplies. It gives rise to Time—"the moving image of eternity," as a spatialised version of the non-spatial activity. But, although appearing in this spatio-temporal multiplicity, the Idea, as the *Parmenides* points out, cannot itself be resident in nor divided among the things whose function it is, since if it were, it could have neither unity nor functional character, *i.e.* it could not be Idea. Hence it could be neither the bond between two

through the diversification of substance, because of the

similars, such as the eye of the Pecten Mollusc and the eye of the vertebrate, nor that unity which illuminates and accounts for the variety of the particulars. It is not a concept—*i.e.* a static form—yet it is what the mind knows in arresting particulars, since otherwise the knowledge of it would be irrelevant to these particulars.

Such then is the Idea, considered rigorously and not poetically. So considered, its resemblance to the *elan* in nature and in its relations to matter is extraordinarily striking. We may note, before comparing the two in detail, that in this form the Idea is not finalistic. It is a *function*, but it is a function that serves nothing external to itself. That it is not mechanical need not be argued. So that in its divergence from mechanism, its resemblance to, but non-identity with finalism, it has one of the essential traits of the *élan*. But consider the other traits of the *élan* as Bergson exhibits it in its relations to particulars of existence, *i.e.* the *élan* as the function of seeing in relation to the molluscan and the vertebrate eye.

Since, argues M. Bergson, the Pecten and the vertebrate separate from the parent stem and grow in divergent directions long before the eye makes its appearance, every attempt to account for their identical appearance, by mechanism, finalism, neo-Darwinism, mutationism, neo-Lamarckism, invites monstrous assumptions of practially impossible coincidences of infinite complexity. The quality of the light to which all eyes respond is not, as a physical cause, a sufficient explanation of their organic structure. The eye is more than a physical effect. It solves a problem. It is a photograph which has been turned into a photographic apparatus. The eye makes use of light. The causal relationship, hence, between light and the eye, is that between something which unwinds and releases, and that which is unwound and released. Now the latter is an "*internal activity*," "something quite different from what we call an effort, for never has an effort been known to produce the slightest complication of an organ, and yet an enormous number of complications, all admirably co-ordinated, have been necessary to pass from the pigment-spot of the Infusorian to the eye of the vertebrate. . .. Yet this, like 'hereditary change in a definite direction, which continues to accumulate and add to itself so as to build up a more and more complex machine, must certainly be related to some sort of effort, but to an effort of far greater depth than the individual effort, far more independent of circumstances, an effort common to most representatives of the same species, inherent in the genus they bear rather than in their substance alone, an effort thereby assured of being passed on to their descendants.'

"The *élan*, then, is dynamic, transcends the individuals, yet belongs to all of them. Each of the individuals that participate in it, is infinitely complex. It alone is simple. There is a contrast between the infinite complexity of the organ and the extreme simplicity of the function. . . . The simplicity belongs to the object itself, and the infinite complexity to the views we take in turning round it, to the symbols by which our senses or intellect represents it to us or, more generally, to elements of a *different order*, with which we try to imitate it artificially, but with which it remains incommensurable, being of a different nature." This is almost the very language of Plato. The analogy is, however, profounder still. This different order is materiality. It does not represent means employed but obstacles avoided. "It is a negative rather than a positive reality." By right, the *function* of vision should reveal an infinity of

mind's need of conception, into infinite attributes and modes, which bear the same relation to the *free*, self-*caused*, and self-determining substance, as the experience of the daily life bears to the *élan vital*. Substance, Nature, God, is the same interpenetration of diversities, the same uncompelled *spontaneous activity*, *natura naturans*. It is an *effect* which is its own *cause;* the self-identity of the different; the simultaneity of the successive; the oneness of the many. It is the force of self-preservation of a God who loves himself with an infinite love. *Natura naturata*, thought, extension, things, are the same mechanical necessities, the same "spatialised sequences" as the daily life. Even the freedom of man has the undetermined self-contained quality of totality which is the central trait of the Bergsonian notion of freedom. There are, of course, the Spinozistic parallelism and eternalism, which at first blush seem antipodal to Bergsonian philosophy. But the antipodation is verbal and not real. The distinctions are conceptual,[1] and the eternalism is the maximal fullness of duration.[2] In point of fact, each mode of substance or individual entity is the interpenetration of the residuum of being, and is a mode, or particular only when its substantial cause is considered as *external* to it, *i.e.* when in the Bergsonian sense, it is spatialised. Conceive it in its fullness, as interpenetrated by the rest and it is substance itself, eternal in the sense of *perduring*, through all its externalisations, just as the Bergsonian *real duration* perdures all its spatialisations. Now even as Spinoza's distinctions between appearance and reality follow from his conception of substance, so do Bergson's from his. The critics of this great and profound thinker have accused him without reason of inconsistency. His premise may be false, but his deductions are not inconsistent. If

things we do not see. It is enchanneled, and the eye represents the channel through which it acts. Its structure conforms to the form of the act, at once expressing and restricting it. The greater the expression, the less the restriction, consequently the difference between the pigment-spot and the vertebrate eye. Both are equally co-ordinated because they are constructed to express the same function, but the function is freest in the vertebrate. Now, how is this function in its re'ation to the material that it organises different from the Platonic Idea? It isn't. It bears, as a *special* function, even the same relation to "the original impetus of life" as a particular idea bears to the Idea of the good. It is effected in virtue of that impetus. *It is implied therein*, implied because life, like the idea, "is more than anything else a tendency to act on inert matter."

The conclusion is then, that the Idea resembles the *élan* in that it is a unitary force, or dynamic function, acting on inert matter, organising it, getting itself diversely expressed through these organisations, without being itself divided or divisible.

[1] *Cf. Ethica*, Bk. i.

[2] *Cf.* Bergson, *Introduction à la Métaphysique.*

reality is what Bergson thinks it, appearance must be as he describes it. But *is* reality as he thinks it?

II.

M. Bergson has a number of striking phrases by which he designates reality. It is "real or pure duration" (*durée réelle*), it is a formidable thrust (*poussée formidable*); it is the onrush of life (*elan vital*), it is the innermost spirit, it is activity, it is change, it is that of which the flow gives rise to all in experience that lives and changes. But it is not, as it appears in experience, truly itself. It is deflected and distorted by alien and secondary stuff with which it mixes, and which in turn it distorts. This alien or secondary stuff is matter or space, and duration must be extricated from its entanglement before it can be perceived in and by itself. This extrication is what has been accomplished in intuition. Now what is the reality so attained to be *known as?*

To be concrete, consider the paragraph of the page I have just written. It belongs to the common data of the daily life. It is an appearance of reality—a collection of marks and symbols, themselves spatial forms, spread over the space of the page, and standing for and representing something to which they are somehow allied and which has been the effective cause of this particular spatial complex. This something is the *one* thought which the paragraph expresses, and which you apprehend when you read the signs that compose it. But these signs are not one. The paragraph can be subdivided into sentences, each before and after another, the sentences into words, the words into letters, the letters into smaller shapes or simpler sounds, and so on endlessly. But now the idea which has so spread and ramified by means of symbols and space is not at all a thing in which I feel a definite, exclusive before and after, a diversity of distinct symbols with distinct meanings, having distinct relations to each other. All I feel is *one* meaning. Its *quale* is a definite tendency to write. And as I write, I am not aware of each word before I write it. I do not know what it *will be.* I discover what has become a particular word by the act of writing. The act seems to deposit the word as it moves along, and with each word deposited it has externalised itself more and more in space. It seems like the unrolling of something rolled up, but not the unrolling of a reel, on which one thing is laid *over* the other, but rather the unrolling of a thing all of whose parts are one inside the other, such that, with-

out space, you cannot distinguish part from part, all are so absolutely one. When I read over this paragraph, I recover this unity, but not in its fullness or adequacy. I have to *recompose* it, and I feel it as a thing attained piecemeal, not at one indivisible view. Why? Because the act has been spatialised.

Suppose now we reverse the process, and try to roll up this act which has unrolled itself here, aiming to recover its central, indivisible tension. The mind moves hereupon not from within outward, but from without inward. Read the paragraph over several times. At the first reading, each word, perhaps each letter, stands out in its place, alone, independent, with no clear or intimate relation to the others. At the second, they all seem closer together, the space they cover seems not so great, we say the reading is swifter, we take in a sentence at a time, now, instead of a word at a time. At the third reading, this is still more true. We feel as if we were *skipping* passages, but we know that we are not, because we know that in the end we can reproduce the identical one idea which the paragraph conveys, with all its ramifications and differences, without feeling anything more than the presence of this continuous unvarying ideational impulse. What has happened? The idea has been changed back from a fact into an act, from something *done* into something *doing*. In the repeated readings we have despatialised it. Letters, words, sentences, have, in the mind, become more and more intimate. Instead of empty spaces between them they have touched, then from touching, they have passed into one another, until each has become indiscernible from all and all from each. They have reverted to the status of that pure inward potency of which they were the spatial expression, the material incarnation.

Consider, however, that this impulse, which incarnated itself in the paragraph, is but one of a countless multitude of impulses which move us. Simple as it is beside the words and sentences that express it, it must be taken in and by itself, related to the whole of our lives as words and sentences are related to it. It must be a mere spatialisation of a totality which in itself is not spatial, and which beside it, is one and infinitely complex. Let us, then, withdraw the mind's eye from the details of life in their isolation. Let us bring them together, as we brought together the letters and sentences of our paragraph. They touch, they interpenetrate, they fuse. We behold the fullness of our self-hood, an enduring tension, which ramifies according to need, into memories, emotions, wishes, ideas, into those mental forms

which the psychologist studies singly, but which is in itself all these at one and the same time.

Nor is it alone this indivisible multiplicity. It swells, changes, grows. We feel this swelling, changing, growing within its very heart—an increase without enlargement. How else, and where else, if we abstract space absolutely? For then there is, as there must be, the actual succession of an inner experience, but such succession cannot make a distinction of before and after. A distinction would mean a juxtaposition, however slight, and juxtaposition, involving the mutual externality of the juxtaposed, is spatial. But by hypothesis and by act we have abstracted from space. We confront the innermost essence of mind in its purity. We see that it is labile, that it is pulsation, and that each pulsation as it adds itself to its predecessors, preserves itself without distinguishing itself from them. The innermost life is a solidarity, at once self-identical and changing, "a continuous melody . . . which carries itself on, indivisible from the beginning to the end of our conscious existence".

Now, being innermost, this life cannot help being psychical, but it is not the psyche of consciousness and personality. It is the more primordial spirit of which the consciousness we know is a spatialisation, a segmentation, of which the personality we are aware of is a contraction and restriction. That it is soonest and most readily to be discovered in the profundities of our own spirit is our grace, which makes humanity perhaps more its kin than any other living or moving being, since in man the cosmic spirit has most nearly liberated itself from the trammels of matter. But in point of fact, man is a very limited concretion of it. Intuition reveals spirit as the force and go of all that moves and acts. It and it alone, is the true metaphysical reality.

What, now, are its metaphysical characteristics?

To begin with, it is flux. It is movement and change, and these, as such, are absolutely *indivisible*. To *arrest* either is to destroy it, for it is a transition, not a condition, and can, therefore, never coincide with immobility. It may be imperceptibly brief, it may be long beyond perception, infinitely long. But it cannot be decomposed. Motion is motion and must always be that. To spatialise it is to think it in terms of its opposite, of immobility. To spatialise it is to *contradict its nature*, to destroy its *identity*. That identity may be, it will be seen, a "self-contradictory" reality, but once captured and defined, it must remain unchanged, by the *rules of the logic of identity*, throughout the discussion. To these rules Bergson rigorously adheres, in all his books. Consequently

the life of all existents becomes conceived qualitatively as *one*, and its diversity and immobility become mere appearances. "There are," he writes,[1] "changes, but there are no things that change. Change has no need of a support. There are movements, but there are not necessarily invariable things that move; movement does not imply a something that possesses it" (*mobile*). Immobility is really appearance which the sense of sight deceives us into taking for reality. But physical science assures us that all matter is in fact movements: and a thing's movement is but a movement of movements. It is movement hence, not matter, that is *substance*, and because of its continuity and unity, the world it expresses itself by is maximally substantial and durable. "For if change is real and even constitutive of all reality, *we must think* of the past as persisting unchanged in its entirety in the one indivisible act of change" just as the notes of a melody persist unchanged in the one indivisible melody,[2] or the meanings of the beginning of our paragraph in the one indivisible meaning of the paragraph. Both are change and immutability at once.

Not to believe this is to be illogical, to be subject to a mere philosophical illusion. This is the illusion that real time is decomposable into instants. Such instants are fundamental in mathematics, but mathematics is only a science of space. It requires that any two of them cannot be separated by a time-interval, for time is nothing more than their juxtaposition. But if they are separated by *nothing*, they are *one* and not two. Two mathematical points that touch are confounded one in the other: they interpenetrate and become an identity. Logic, hence, compels the assumption of an "interval of duration". How great this interval shall be is determined only by our capacity for attention. Let the attention expand indefinitely, and it embraces more and more and more of the past. The present, indeed, is merely the field of instant attention. To say that any portion of it is destroyed when it drops from attention would be obviously wrong. It does not cease to exist, but it becomes *past*. The past is that part of the present which the mind *neglects*: when the mind again attends to it, it becomes present. But this present is not a mere simultaneity. It is "something continually present and continually moving," "an enduring present," in which the past stays subconscious, waiting only

[1] *Perception du Changement*, p. 24.

[2] The italics are mine. There is the significant deductive transition in the phrase "we must think," for the necessity is logical only.

on our needs to bring up to consciousness its appropriate part, and surging up in its totality whenever the attention on externals is relaxed, as in the cases of drowning and other forms of *vital crisis* and sudden death. Then the attention turns inward, and one's whole life unrolls before the mind's eye. Logic and experience both thus compel us to believe the past conserves itself automatically, that this self-conservation in the present is cosmic, and that it is nothing else than the indivisibility of change.

But if this is the nature of the cosmos, then, though an infinite deal is continually adding itself to whatever exists, nothing is ever, nor can be, subtracted. The substantiality and durability of the world *are* maximal. Change itself is that hidden substance which philosophers have sought, which flows through the fingers that seek by grasping to arrest it. Perceived in its nakedness, it is neither unstable nor immutable, but the very stuff of duration, at once indivisible and changing. Yet further: that which is *indivisibly* dynamic cannot truly be *differentiated* into cause and effect. Life is a concrete duration, the unity of the past with the present. If it changes, hence, the source of the change is in itself, not in anything external. Cause is *self-caused:* effect is self-effectuation: change is creative growth, neither determined mechanically nor teleologically. Life, perceived in intuition, is *free.* For, if it were not, the indivisibility of change would be destroyed, duration would be spatialised. It would be possible to forecast events infallibly. Determinism is equivalent to this possibility. Yet how is any foretelling whatever possible? Does not the understanding of the true nature of a *cause* require also the perception of its *effect?* And how is the effect to be perceived unless it is already present, and if it is already present, what can be meant by prediction? Actually, in the inwardness of duration, not even action itself can predict. There are multitudes in the realization of an ideal that the ideal has no inkling of. Life, then, eludes prediction. But does it also escape causation? Determinism is not alone the possibility of prediction, it is also the mechanical causal necessity. Can life elude this necessity? Yes, however cause be defined, life can. For intuition shows us life as persistent variation: cause, hence, defined as *unvarying* antecedent of its effect, cannot apply to life. Or take cause as commonsense tends to take it, as a compromise between the *identity* of cause and effect, and heterogeneity of time, of creative activity. Necessity, in that view, is reached by the element of identity, by the repetition of *the same*—the same number, the same quality, the same relation—in the effect. Then, as

cause approaches necessity, it goes farther and farther from true activity, from *duration* and *freedom*, where alone genuine causation exists. There necessity is a pure negation. There the future exists in the present only as a vague possibility. The transition from present to future is seen by intuition to be, first of all, an effort, and secondly, an effort which does not always realize the felt possibility, yet which rests quite complete in whatever future it has brought about. Life is free.

In sum: Ultimate reality is of the same stuff as our inner life, something akin to the will, the *go* of our own existence, which unwinds itself—an enduring act, continuous, indivisible, substantial, creative, free, an act which is the unity and interpenetration of all that lives and moves and has its being, an incessant life which is the concretion of all durations, of all that *apparent* diversity of beings which are materialisations of this same formidable impetus, this *élan* of life, which is their unshatterable and persistent substance.

Such, then, is the fundamental reality which intuition reveals. How different in character and direction from the reality of the daily life, with its numerous individuals, its unchanging solids, its immutable concepts, its many checks and defeats, its few successes! Could, indeed, so perfect a thing as the *élan vital* give rise to so imperfect a thing as conscious experience? Never, of itself. The ordinary world of men and things is a degradation of the *élan*. It is the disruption of its unity by means of the shock of space and matter. These are the enemy, these are the evil principle, and of the war of these with the life-force worlds are born.

What are they? How are they known? The more fundamental one is *space*. This Bergson assumes, but whether as the metaphysical peer of *pure duration*, or something secondary and inferior, one may not absolutely say. In his earlier thinking, the notion appears that space is a Kantian form of intuition and has no reality apart from the mind that thinks it. "We have assumed," he writes in *Time and Freewill*, "the existence of a homogeneous space, and with Kant, distinguished this space from the matter that fills it. With him we have admitted that homogeneous space is a form of our sensibility." It is an "infinitely fine network which we stretch beneath material continuity in order to make ourselves masters of it, to decompose it according to the plan of our activities and need". And this notion occurs again and again, but less explicitly stated in his later work. Space, in *Matter and Memory*, is called a "diagrammatic design of our eventual action on matter". And in *Creative Evolution*

it is more than once designated as the practical form of our intelligent action on things. From this point of view, it is not a secondary thing, but a tertiary one, arising after a creature having need of it has been created by the evolutionary action of duration. But this view of space is incidental to the exigencies of exposition. It is not compelled by the demands of Bergson's first indefinable, *pure duration.* That requires, over against it, if it is to be a factor in accounting for the course and character of experience, something with which it may combine, on which it may act. This something need not be so real as that is, it may be metaphysically secondary, an inversion, but it must be opposite. Such an opposite is space. "There is a real space, without duration . . . and a real duration, the heterogeneous moments of which interpenetrate." Space is the inversion of duration. Duration is interpenetration, the psychical organisation of heterogeneous qualities that are immanently successive one to another. Space is juxtaposition, the simultaneous externality of homogeneous points, whose essential character is quantitative, not qualitative, an empty and uniform medium which is self-sufficient, void of every quality, amorphous, inert, but a "reality as solid as sensations themselves, but of a different order". Consequently space is a thing outside ourselves, "a mutual externality without succession," but an absolute reality, on which we act (which must be real therefore, since it is impossible for action to move in the unreal) and which we can and do know in its absoluteness by means of mathematics.

But mathematics, absolute, real—are not these contradictory terms? They would be, if they were not discoverable in the same intuition that reveals real duration. The only difference is that the *direction* of the intuition must be changed. Consider again the intuition of any paragraph of this chapter. Its psychic purity is attained by the incessant accumulation and interpenetration of its details. What dilutes this purity? The fact that in expression, these details, instead of being an unchanging, fluid, tensive unity, become *external* to one another. This externalisation is *dissipation.*[1] Instead of there being, from moment to moment, *more* than there was before, there is from moment to moment less. The force spreads, dissipates, tends to cease. If it could cease utterly and absolutely, it would be indistinguishable from space: extension is detension. That, however, does not happen. The written or spoken paragraph is not pure space.

[1] *Cf. Creative Evolution,* pp. 249-259.

It is matter. Matter is disintegrating spirit, spirit running down, on the way to space.[1] Spirit absolutely run down would have become its opposite, space. Space gathered up, interpenetrate, might possibly be spirit. Consequently behind these two "absolutes," "duration" and "space," which are inversions of one another, opposite orders, interfering with another in such a way that the absence of one means the presence of its opposite, there is a unity "vaster and higher" of which these are perhaps complementary differentiations, as instinct and intelligence are of the indivisible life of man. And between these two poles of the utterly transcendent and barely suggested unity of which they are differentiations lies matter, just as real as they, to be known immediately and directly by the same intuitive act, only reversed in its duration, as life "undoing itself," an absolute reality which physics studies and reveals, a thing no more than "pure duration ballasted by geometry" and partaking of the nature of both. But the intuitive act reversed in its direction, is intelligence, conceptualisation, analysis. The ultimate province of the intellect, hence, is pure space. Its ultimate form is geometry. And intermediate between the intuition of life and the intuition of space lies the intuition of matter. This is attained in "pure perception" and in the mutually external categories and forms of the understanding, in concepts, which are static, isolate, cinematographic snapshots of the flux, catching its externalisations. "In reality, life is a movement, materiality is the inverse movement, and each of these two movements is simple, the matter which forms a world being an undivided flux, and undivided also the life that runs through it, carving out in it living beings all along its track."[2]

Matter, hence, in so far as it implies duration is also a continuum and conterminous with spirit. It involves a *before* and *after*, because it is spatial, but it involves also the linking together of these successive moments of time "by a thread of variable quality which cannot be without some likeness to the continuity of our own consciousness." Matter endures, and is, as enduring, the pure flux of dynamic energy which is the goal of the physicist's researches. But if matter is a continuous flux of energy, it cannot be the collection of the discrete objects of experience to which we formally apply the term. These are tertiary in that they are derivatives of matter. They are the appearance of appearance, and are

[1] M. Bergson regards the second law of thermodynamics as the most metaphysical of all physical laws.

[2] *Creative Evolution*, p. 249.

appearance to appearance. They are the latest events in the cosmic drama whose climax is Man.

The title of this drama is Creative Evolution. Its great protagonists, its hero and villain, when M. Bergson raises the curtain for us, are Pure Duration and Space, Spirit and Matter, *Elan Vital* and Inertia, these complementary and inverse aspects of reality, so essentially like Spinoza's *Cogitatio* and *Extensio*, attributes of *one* substance and in it, identical: so essentially like Plato's *idea* and non-being, absorbable in the Neo-Platonic One. The drama arises out of the inward incompatibility of these two with one another. They cannot live together in democratic amity. The existence of the one involves the mutilation if not the destruction of the other, without concession, without compromise, even in that apparent compromise we call matter. The Life Force, which is consciousness, "need to create," free, spiritual, self-cumulative, is suppressed and constrained by the rigidity and vacuity of space. A force finite and given once for all, but containing within itself numberless potentialities, not unlike Platonic ideas, it cannot freely generate, fulfil, and gather within itself the more that continuously grows in it. For the life-force is a thing that grows by what it feeds on, and it feeds upon itself. Matter hinders and interrupts this creative growth, and it hence becomes the task of the life-force to overcome the checks and hindrances of its opponent, and to convert it from an opponent into a servant. Life succeeds in doing so, but not without a price. It pays for its conquest with its unity. In its contact with matter, life is comparable to an impulsion or an impetus; regarded in itself, it is "an immensity of potentiality, a mutual encroachment of thousands and thousands of tendencies, which nevertheless are thousands and thousands "only when regarded as outside each other, only *i.e.*, when spatialised".[1] It is compelled to divide, to adopt divergent lines of growth, in unforeseeable directions; it is compelled to "insinuate" itself into matter, "to adopt its rhythm" and movement. By so doing, however, it attains its ends. It conquers matter, and by organising, diverts it from its own rigidity to the uses of life. The core of this diversion is the accumulation of stores of energy and their expenditure, "by means of a matter as supple as possible in directions variable and unforeseen' '.

The first act in the conquest of matter, hence, is the evolution of the vegetable. Whatever else life may feed on, its primary and ultimate food is vegetation. "Vegetables

[1] *Creative Evolution*, p. 258.

alone gather in the solar energy and animals do but borrow it from them." By means of the "chlorophyllian function," vegetation uses the solar energy to fix the carbon of carbon dioxide gas, and thereby to store it, to use as need be. But the vegetable is torpid, it is nearer in its action to matter than to the unexpected freedom of life. It cannot both gradually store and suddenly use energy. In the vegetable therefore the struggle between life and matter is something of a draw. Life has gathered up matter, but the gathered matter holds back the gathering life. Life has still not come to its own freedom, into its unobstructed flowing.

The second act is the divergence of organisation under the stress of this tendency toward action in variable and unforeseen directions. Plants went on doing as they always did, but side by side with them, there developed the animal, whose characteristic it is to set free stored-up energy. This act involved many scenes, many more divergences, in not all of which did life conquer matter. "We must take into account retrogressions, arrests, accidents of every kind. And we must remember above all, that each species behaves as if the general movement of life had stopped at it, instead of passing through it. It thinks only of itself, it lives only for itself. Hence the numberless struggles that we behold in nature. Hence, a discord, striking and terrible, but for which the original principle of life must not be held responsible."[1] Alone to the compulsion of matter does the responsibility belong. For life itself is not thinkable either as pure unity or pure multiplicity. It is a One that rejects the category of oneness; many, yet rejecting the category of manyness. It might have been, and would more easily have been, just itself, rather than the diversity of individuals and of societies where struggle for life is that discord "so striking and terrible". But unity and multiplicity as such belong to matter and matter compels it to choose one of the two. Yet its choice will never be definitive, it will leap from one to the other indefinitely.

The mere animal, though more explosive and unaccountable than the plant, is automatic. Its explosions are marked by the absence of variety, by sameness. Spirit is not yet completely liberated. To become so, it needs an organised matter of maximum instability. The making and maintenance of this is the third act of Life's struggle with matter, the climactic act, in which it asserts itself, master of matter at last, by means of the human brain. This differs from

[1] *Creative Evolution*, pp. 254-255.

other brains in that "the number of mechanisms it can set up, and consequently the choice that it gives as to which among them shall be released, is unlimited". The limitlessness makes it differ from other brains not in degree, but in kind.[1] So "with man, consciousness breaks the chain. In man and man alone it sets itself free."[2] His body is his machine which he uses as he pleases. Because of his complex brain with its capacity for opposed motor mechanisms; because of his language with its capacity for incarnating consciousness in an immaterial body; because of his social life with its capacity for storing and preserving effort as language preserves thought, man is free. In him Spirit triumphs completely over Matter, Duration over Space, the Life Force over Inertia. The drama has a happy ending. Seeing the world so, "we feel ourselves no longer isolated in humanity, humanity no longer seems isolated in the nature that it dominates. As the smallest grain of dust is bound up with our entire solar system, drawn along with it in that undivided movement of descent which is materiality itself, so all organised beings, from the humblest to the highest, from the first origins of life to the time in which we are, and in all places as in all times, do but evidence a single impulsion, the inverse of the movement of matter, and in itself indivisible. All the living hold together, and all yield to the same tremendous push. The animal takes its stand on the plant, man bestrides animality, and the whole of humanity, in space and time, is one immense army galloping beside and before and behind each of us in an overwhelming charge able to beat down every resistance and clear the most formidable obstacles, perhaps even death."[3]

III.

There exists in philosophy, writes William James,[4] a "plain alternative. Is the manyness in oneness that indubitably characterises the world we inhabit a property only of the absolute whole of things, so that you must postulate that one-enormous-whole indivisibly as the *prius* of there being any many at all—in other words, start with the rationalistic block-universe, entire, unmitigated, complete?—or can the finite elements have their own aboriginal forms of manyness in oneness, and where they have no immediate oneness still be continued into one another by intermediary terms—each

[1] *Creative Evolution*, p. 263.
[2] *Ibid.*, p. 264.
[3] *Ibid.*, pp. 270-271.
[4] *A Pluralistic Universe*, p. 326

one of these terms being one with its next neighbours, and yet the total 'oneness' never getting absolutely complete?"

Of this alternative, it would seem, Bergson chooses explicitly neither horn. In its intrinsic nature, pure duration is an ineffable *totum simul*, not yet differentiated into the inverse movements of life and matter, and rejecting, like Plotinos' One, the categories of both *oneness* and *manyness*. Implicitly Bergson chooses the former of these alternatives. He observes with James that experience has contradictory aspects, that it possesses both oneness and manyness at the same time. Their co-presence in experience gives rise to innumerable philosophic difficulties, notably the great antinomies which troubled philosophers from Zeno to Kant. How surmount the difficulties, how solve the antinomies? If you study their basis and origin, you observe that they arise from the attempt to explain manyness by oneness and oneness by manyness. Philosophic salvation, then, must lie in a new principle of explanation. What shall it be, and be new? Why, simply rendering to Cæsar that which is Cæsar's and to God that which is God's. No wonder logical puzzles and essential contradictions persist in philosophy. They must, since they are no more than attempts to reconcile the irreconcilable. Segregate these, let each principle account only for itself, and the puzzle disappears. You find, to begin with, the absolute oneness, the undesignable and transcendent unity of life, accounting for motion, action, continuity, for all that has the quality of unity. In the Bergsonian world, the qualitative basis is given *at once*, and whatever comings there are, are somewhat predefined in the "original impetus" and contingent on its material obstacles: "Life does not proceed by the association and addition of elements, but by the dissociation and division"; it is creation that goes on for ever in virtue of an initial movement, which constitutes the unity of the organic world. It is the continuity of a "*single* and *identical* élan" which has split up along the lines of a divergent evolution. It is what is "common" to all divergencies, and these are complements one of the other, in such wise that their very complementariness and harmony contain and presuppose and depend upon an "identity of impulsion". The quoted terms are Bergson's own. On the other hand, you find the absolute manyness, the Bradleyan unrelatable discreteness which is the designable diversity of space, accounting for all that derives from it. And so long as you confine each principle to its own sphere, you get into no difficulties. Seek, however, to take the concrete individuality of experience at its *face-value*, as *manyness-in-oneness*, and

try to explain one by the other—then, presto, all the difficulties reappear. Time, action, life can only explain those things which are identical with them; space, inertness, matter, can explain only those things which are identical with them. Antinomies arise when the explanations offered are transverse. In point of fact they are not alternatives; each member of the pair is valid *in its own field*. If, therefore, the universe seems disorderly, it *seems* so merely. There is no real disorder. There is only the substitution of the spatial for the temporal order, the material for the spiritual, and conversely. Chaos and the void are pseudo-ideas. The realities are spirit and space. Ultimately, of course, these two fields may be derivable from something vaster and higher, a unity which embraces and reconciles both. How, is not written. The course of experience, however, is to be explained by these diverse and opposite principles.

Unity, hence, immediately and ultimately includes for Bergson a one-enormous-whole indivisibly given as the *prius* of the vital or organic many. Diversity, similarly involves an absolutely irreconcilable externality. Both of these are *transcendental* principles and not discoverable as such in the immediacies of experience. Each requires, in order to be perceived, the absoluteness of intuition, the intuition of the spirit, in the one case; of the intellect, in the other. Each is the limit reached by a rigorous application of the identity-logic. There are involved, hence, in the Bergsonian philosophy both the fallacies of traditional metaphysics--the fallacy of composition which is the differentia of empiricism and the fallacy of division which is the differentia of apriorism. Each of these fallacies is a metaphysical dogma—one says that the part has no reality save in terms of the whole; the other says that the whole is nothing more than an aggregate of parts. What is significant is the bond that unites the two and makes them harmonious parts of one identical tradition. This bond is the dogma of the *unreality of relations*. For apriorism, relations have ever been internal, so that the universe was always a block: the whole concentrated in every point. For empiricism, relations have been utterly external, such that the entities or impressions which compose the flux of experience could never touch, never influence each other, never make any real difference to each other. This double status of relations is accepted *in toto* by Bergson. In the *élan*, the interpenetration of the heterogeneous is such that distinctions cannot be made and must hence be artificially supplied by the mind: in space the discreteness is so absolute

that hence nothing happens there unless a mind internalises its contents.[1]

Now, if any one thing more than any other sets James outside the philosophic tradition, and distinguishes radical and immediate empiricism from both the empiricism and the apriorism of tradition, it is his readiness to take relations, conjunctive as well as disjunctive, internal no less than external, at their face value, whenever and wherever they appear. Neither the substantial flux, he points out, interpenetrative to the uttermost, nor yet the discrete space, external to the uttermost, is barren of *conjunctive* relations. Neither one is oppugnant to and completely exclusive of the other. There is not a block of oneness that we call life, and a hegemony of bare homogeneous manyness that we call space, nor yet an ineffable *totum simul* which is yet *not* that (like Plotinos' One) and rejects both categories. There is a *real* combination of manyness and oneness in which the relations that bind, and whose binding makes the oneness, are as immediate data of sense-perception as the terms that are bound; and the relations that distinguish, and whose actions make the manyness, have as legitimate a metaphysical status as the terms that they differentiate. There is no *whole* in which all that is to be is somehow foreshadowed and predetermined: there is no contingency which is merely extra-spiritual and involves no difference in the quality of spirit; there is no necessary conservation of the past. Destruction is as real as creation, contingency is a trait of every entity that exists, and what exists, exists piecemeal, in its own right, and not in terms of a whole, indivisible act which cuts through matter.

The divergence here indicated is so profound that it seems strange that any similarity whatever should exist between these two thinkers, and stranger still that the one should feel himself indebted to the other for anything whatever. But does not, indeed, the existence of such a conjunction amid such diversity constitute a *prima facie* exhibition of the manyness-and-oneness of experience which James points out? We may note that both these thinkers, from the outset, are temporalists; that both are agreed as to the inadequacy of static concepts to act as substitutes for activities, and as to the distortion of reality which arises when concepts are taken as the identical equivalence of things which they represent. Concepts, like the rest of reality, are only self-revealing, and in use they are controllers rather than revealers. But here

[1] *Cf. Creative Evolution*, pp. 147-149, 250, 356, 367-368.

the resemblance stops. The self which concepts reveal is the self-hood of matter and space according to Bergson, and the dimension in which they exist is not the dimension of life at all. They are metaphysically as well as functionally tertiary. Not so for James. Their metaphysical status is not different from that of any other entity: it is their function that is different, and it is the confusion of status with function that is, for James, the source of metaphysical error.

Now, it is with Bergson's treatment of concepts in their relation to activity, movement and life that James is most concerned. What is it that he gains from Bergson? He gains, to begin with, freedom to accept experience at its face value; he gains, in the second place, confirmation that this face-value is not illusory.

The assumption which underlay James's treatment of the greater problems of psychology was the assumption of the dualism of mind and matter. The assumption was methodological, not metaphysical, and the theory of psychophysical parallelism was dirempted at one point by a theory of interaction for which the warrant was empirico-ontologic, rather than a logical deduction from the parallelistic premise. Logic demanded the correlation of brain states with mental states. But whereas brain states might be compounded, mental states could not so be. They were fluid, evanescent, not perdurable, and for each brain state there could be, hence, one and only one mental state. "The so-called mental compounds are simple *psychic reactions of a higher type. The form itself of them . . . is something new.*[1] We can't say that awareness of the alphabet as such is nothing more than twenty-six awarenesses, each of a separate letter; for those are twenty-six distinct awarenesses of single letters *without* others, while their so-called sum is one awareness, of every letter *with* its comrades. There is thus something new in the collective consciousness. It means the same letters, indeed, but it knows them in this novel way. It is safer . . . to treat the consciousness of the alphabet as a twenty-seventh fact, the substitute and not sum of the twenty-six simpler consciousnesses, and to say that while under certain physiological conditions they alone are produced, other, more complex physiological conditions result in its production instead. . . . The higher thoughts . . . are psychic units, not compounds; but for all that, they may know together as a collective multitude the very same objects which under other conditions are known separately by as many simple thoughts.

[1] The italics are mine.

The theory of combination, I was forced to conclude, is thus untenable, being both logically nonsensical and practically unnecessary." [1]

Such is the logical outcome enforced by the assumption of psychophysical parallelism. But this is an outcome which, while true in many instances, flies none the less in the face of the facts in many others. In the physical world, for instance, "we make with impunity the assumption that one and the same material object can figure in an indefinitely large number of different processes at once. An air particle or an ether particle 'compounds' the different directions of movement imprinted on it without obliterating their several individualities. It delivers them distinct, on the contrary, at as many several 'receivers' (ear, eye, or what not) as may be 'tuned' to that effect." [2] Why, distinctly true in physics, should this not also be true in psychology? In the "experience of activity" what is "the true relation of the longer-span to the shorter-span activities"? "When, for example, a number of 'ideas' . . . grow confluent in a larger field of consciousness, do the smaller activities still coexist with the wider activities then experienced by the conscious subject? And, if so, do the wide activities accompany the narrow ones inertly or do they exert control? Or do they perhaps attend, supplant and replace them and short circuit their effects?" [3] Wundt and other psychologists had had the advantage of conceiving the "compounding of consciousness" as analogous to the compounding of matter. They exceeded thereby strict logic, and James was unwilling to commit this excess until he read Bergson. But the theory of consciousness, which Bergson maintains and defends is, significantly enough, exactly that which, because of his reading of Bergson's works, James abandons. The idea of the alphabet is, indeed, for Bergson, a "simple psychic reaction of a higher type" of which "the form itself is something new". It is true that, according to the Bergsonian philosophy, the earlier states are conserved as memory, but not each in its individuality after the analogy of physical motions cited above, but penetrated through and through by all the rest, "every letter with its comrades," the whole heterogeneous unity related *internally*. So that the consciousness of the alphabet *is* a twenty-seventh fact, a psychic unit, not a compound, a thing absolutely new. There can be found in Bergson's notion of compounding nothing analogous to physical compounding of entities to

[1] *A Pluralistic Universe*, pp. 188-189.
[2] *Essays in Radical Empiricism*, pp. 125-126.
[3] *A Pluralistic Universe*, p. 394.

which James has committed himself. Extraordinary and paradoxical! Until the candid reader of James observes that what concerns him in the Bergsonian philosophy is not its conceptions of spirit and of matter, but its critique of intellectualism, its analysis of the relation of concepts to motion, to the continuum, to the perceptual flux. This analysis frees James from the decrees of logic and permits him to accept unequivocally the self-portrayal of immediate experience.

And in all this Bergson is still at the position in psychology that James has abandoned, and where James strikes out toward a neutralistic pluralism and radical empiricism, Bergson erects the methodological assumptions of psychophysics into the ontological dualism of spirit and matter of the philosophic tradition, subdued by the shadow of a Plotinian monism.

IV.

James's acceptance of the principle of compounding in essence identical with that of naturalistic physics completely destroyed for him the barrier between mind and matter, a barrier already considerably broken in the development of his philosophy of pure experience,[1] with its insistence on the experiential reality of relations, and on the metaphysical equality of all experiential entities. It is no more than the acknowledgment of the ontologic validity of the manyness-and-oneness which is the face of experience, and its salvation from the stigma of 'appearance' that tradition, and Bergson with it, tend to attach to it as such. Reality is a compenetration, but not that complete and utter internalisation of qualities which Bergson calls spirit: reality is a multiplicity, yet not that complete and utter externalisation of qualityless points which Bergson calls space and the goal of matter. Here and now, where things happen, in the region of all temporal reality without exception, exists this many-in-one. The oneness is the sensible continuity of the stream of experience. Herein every element is really *next* to its neighbours, every point of flux a conflux, so that there is literally nothing between. The manyness are the elements which exist there, so continuous. "Nothing real is absolutely simple . . . every smallest bit of experience is a *multum in parvo* plurally related, . . . each relation is one aspect, character, or function, way of its being taken or way of its taking something else; and . . . a bit of reality when

[1] *Cf. Essays in Radical Empiricism*, Essays III. and IV.

actually engaged in one of these relations is not *by that very fact* engaged in all the other relations simultaneously. The relations are not all what the French call *solidaires* with one another. Without losing its identity a thing can either take up or drop another thing."[1] This offers us a multitude, a multiverse, "but our multiverse still makes a 'universe,' for every part, though it may not be in actual or immediate connexion, is nevertheless in some possible or mediated connexion, with every other part however remote, through the fact that each part hangs together with its next neighbours in inextricable interfusion. The type of union, it is true, is different from the monistic type of *alleinheit*. It is not a universal co-implication or integration *durcheinander*. It is what I call the strung-along type, the type of continuity, contiguity, or concatenation."[2]

What is remarkable about this statement is the extraordinary sobriety of judgment and clearness of vision so characteristic of James and so apt to cause men of lesser restraint and narrower insight to accuse him of inconsistency. The unity and continuity here described are those of an utter and transitive nextness. It is the exact opposite of Bergson's unity and continuity which is the *solidarity* of compenetrating qualities, a literal integration *durcheinander*. It would seem as if James were logically required to pass from a somewhat similar solidarity in the bits of experience, every portion of which is somehow its own hegelian other, to the similar solidarity of the whole. This is exactly what, under the compulsion of logic, Bergson does. But for James, such a procedure would be a fallacy of composition, and he insists on characterising the larger units of experience as they appear, and on taking them at their face value. He has committed himself to the theory of compounding which Bergson freed him to adopt, *in toto*. The parts do retain their identity and do function in the wholes which they constitute in terms of their own unique natures, and the wholes again do have powers and attributes and efficacies not given to the parts and in no sense foreshadowed in them. Each must be taken in its individual integrity and judged on its own showing. The *happenings*, hence, which constitute temporal reality, are not one *happening*, unique, indivisible, concrete, substantial, they are truly *plural* and truly *discrete*. Inwardly complex and interpenetrative, with "rearward and forward looking ends," they are outwardly just *next* each other, and their overflowing at their edges is not through

[1] *A Pluralistic Universe*, pp. 322-323. [2] *Ibid.*, p. 325.

and through. The relations that bind are external, as well as internal.

Consequently, while each *pulse* of experience is an interpenetrative unity of past and present, a *passing* moment, it is only *next* its fellows and not absolutely in them. Reality is discrete and grows by drops. "If a bottle had to be emptied by an infinite number of successive decrements, it is mathematically impossible that the emptying should ever positively terminate. In point of fact, however, bottles and coffee-pots empty themselves by an finite number of decrements, each of definite amount. Either a whole drop emerges or nothing emerges from the spout. If all change went thus dropwise, so to speak, *if real time spouted or grew by units of duration of determinate amount*,[1] just as our perceptions of it grew by pulses, there would be no Zenonian paradoxes or Kantian antinomies to trouble us. All our sensible experiences, as we get them immediately, do thus change by discrete pulses of perception, each of which keeps us saying 'more, more, more,' or 'less, less, less,' as the definite increments or diminutions make themselves felt." [2]

But is not the continuity of a reality so describable really discontinuity? Yes, but only in logic, not in fact. The discontinuity is consonant with "the radically pluralist, empircist, perceptualist position," and James "adopts it in principle," qualifying it, however, so as "to fit it closely to perceptual experience".[3] The principle is that reality changes by steps finite in number and discrete. The qualification is that such changing involves not an intrinsic but a superimposed mathematico-logical discontinuity. "The mathematical definition of continuous quantity as 'that between any two elements or terms of which there is another term' is directly opposed to the more empirical or perceptual notion that anything is continuous when its parts appear as immediate next neighbours, with absolutely nothing between."[4] The discontinuous, thus, is also at the same time continuous. The continuity is not that which is merely thought, or deduced, or symbolised, it is the continuity discovered and perceived. Here, again, the principle of *compounding* forced on James by experience in the face of ratiocination, is rigorously applied. His empiricism shows itself once more to be radical.

[1] The italics are mine. [2] *A Pluralistic Universe*, p. 231.
[3] *Some Problems in Philosophy*, p. 172. [4] *Ibid.*, p. 187.

V.

Such, then, is the structure of reality considered in its nearness and intimacy. Is it characterised by a prepotent order or a duality of orders? Does it, as a whole, contain a dominant stuff, or substance? Again, to say so would be to commit the fallacy of composition. With respect to order, experience as a whole presents itself as a chaos or quasi-chaos,—*i.e.* as a much-at-once. Its constitution appears to be, at least, non-rational, and there is to be found "no good warrant for ever suspecting the existence of any reality of a higher denomination than that distributed and strung along and flowing sort of reality we finite beings swim in.[1] . . . No more of reality collected together at once is extant anywhere perhaps, than in my experience of reading this page, or in yours of listening. . . . Sensational experiences *are* their 'own others'. . . . both internally and externally. Inwardly they are one with their parts, and outwardly they pass continuously into their next neighbours, so that events separated by years of time in a man's life hang together unbrokenly by intermediary events."[2] We are, it would seem, only warranted in concluding that "experience as a whole is a process of time, whereby innumerable particular terms lapse and are superseded by others that follow upon them by transitions which, whether disjunctive or conjunctive in content, are themselves experiences, and must in general be accounted at least as real as the terms which they relate. . . . The whole system . . . as immediately given presents itself as a quasi-chaos through which one can pass out of an initial term in many directions and yet end in the same terminus, moving from next to next by a great many possible parts."[3] "There is vastly more discontinuity in the sum total of experience than we commonly suppose. The objective nucleus of every man's experience, his own body, is, it is true, a continuous percept; and equally continuous as a percept (though we may be inattentive to it) is the material environment of that body, changing by gradual transition when the body moves. But the distant parts of the physical world are at all times absent from us, and form conceptual objects merely, into the perceptual reality of which our life inserts itself at points discrete and relatively rare. Round their several objective nuclei, partly shared and common and partly discrete, of the real physical world, innumerable thinkers, pursuing their several lines of physically true

[1] *A Pluralistic Universe*, p. 213. [2] *Ibid.*, p. 285.
[3] *Essays in Radical Empiricism*, p. 134.

cognition, trace paths that intersect one another only at discontinuous perceptual points, and the rest of the time are quite incongruent; and around all the nuclei of shared 'reality' . . . floats the vast cloud of experiences that are wholly subjective, that are non-substitutional, that find not even an eventual ending for themselves in the perceptual world—the mere day-dreams and joys and sufferings and wishes of the individual minds. They exist *with* one another, indeed, and with the objective nuclei, but out of them, it is probable that to all eternity no interrelated system of any kind will ever be made." [1] The world, in a word, is radically a pluralism, existence is piecemeal, and "piecemeal existence is independent of complete collectibility . . . some facts at any rate exist only distributively, or in form of a set of eaches, which (even if in infinite number) need not in any intelligible sense either experience themselves or get experienced by anything else, as members of an All."

Metaphysical and experiential being are, we may conclude, coincident with respect to order. There is neither monism nor dualism nor alternation of two orders. There are just terms and relations, conjunctive and disjunctive. The multiverse is discrete and radically plural. Reality is externally related. "Everything you can think of, however vast or inclusive, has . . . a genuinely 'external' environment of some sort or amount. Things are 'with' one another in many ways, but nothing includes everything, or dominates over everything. The word 'and' trails along after every sentence. Something always escapes. 'Ever not quite' has to be said of the best attempts made anywhere in the universe at attaining all-inclusiveness. The pluralistic world is thus more like a federal republic than like an empire or a kingdom. However much may be collected, however much may report itself as present at any effective centre of consciousness or action, something is self-governed and absent and unreduced to unity." [2]

Moreover, metaphysical is coincident with experiential being not alone in its discreteness, but in its continuity. The latter is constituted by "positively conjunctive transition". This involves neither chasm nor leap. "Being the very original of what we mean by continuity, it makes a continuum wherever it appears. Our fields of experience have no more definite boundaries than have our fields of view. Both are fringed for ever by a *more* that continuously develops,

[1] *Essays in Radical Empiricism*, pp. 65, 66.
[2] *A Pluralistic Universe*, pp. 321, 322.

and that continuously supersedes them as life proceeds."[1] "Life is in the transitions as much as in the terms connected; often, indeed, it seems to be there more emphatically, as if our spurts and sallies forward were the real firing-line of the battle, were like the thin line of flame advancing across the dry autumnal field which the farmer proceeds to burn. In this line we live prospectively as well as retrospectively. It is 'of' the past, inasmuch as it comes expressly by the past's continuation; it is 'of' the future in so far as the future, when it comes, will have continued it."[2]

Reality is a mosaic in which the pieces cling together by their edges, the transitions between them forming their cement. From this mosaic no experiential entity is excluded. Particularly, time is harmoniously co-present with space, and conversely. There is no ontological alternation or substitution of one for the other as in the Bergsonian account, no difference by the presence or absence of extension.[3] "Far back as we go, the flux, both as a whole and in its parts, is that of things conjunct and separated. The great continua of time, space, and the self envelop everything between them, and flow *together without interfering.*[4] The things that they envelop come as separate in some ways and as continuous in others. Some sensations coalesce with some ideas, and others are irreconcilable. Qualities compenetrate one space or exclude each other from it. . . . In all this the *continuities and the discontinuities are absolutely co-ordinate matters* of immediate feeling. . . . And the feeling of continuance in no wise jars upon the simultaneous feeling of novelty."[5] In all this the unity or continuity is that of "concatenation," not of "consolidation". "The world hangs together from next to next in a variety of ways, so that when you are off one thing you can always be on to something else without ever dropping out of your world."[6]

As there is no dominant and prevailing order in reality, but a compenetration and a conflict of all orders, so also there is no dominant and prevailing substance. The stuff of reality is whatever it appears to be—"*that*, just what appears, space, intensity, flatness, heaviness, brownness, what not". "There is no general stuff of which experience at large is made. There are as many stuffs as there are 'natures' in the things experienced."[7] Particularly is it to

[1] *Essays in Radical Empiricism*, pp. 70, 71.
[2] *Ibid.*, p. 87.
[3] *Ibid.*, p. 31.
[4] *Ibid.*, pp. 94-95. The italics are mine.
[5] *Some Problems in Philosophy*, p. 31.
[6] *Ibid.*, p. 131.
[7] *Essays in Radical Empiricism*, pp. 26, 27.

be denied that there exists any such special order of dominations as mind and matter, taken metaphysically, and Bergson so takes them. "There is . . . no aboriginal stuff or quality of being, contrasted with that of which material objects are made, out of which our thoughts of them are made."[1] There is no "impalpable inner flowing" given as an immediate consciousness of consciousness itself.[2] There is no inextension. "Descartes for the first time defined thought as the absolutely unextended, and later philosophers have accepted the description as correct. But what possible meaning has it to say that, when we think of a foot-rule or a square yard, extension is not attributable to our thought? Of every extended object, the *adequate* mental picture must have all the extension of the object itself. The difference between objective and subjective extension is one of relation to a context solely. In the mind the various extents maintain no necessarily stubborn order relatively to each other, while in the physical world they bound each other stably, and added together, make the real enveloping Unit which we believe in and call real Space. As 'outer' they carry themselves adversely, so to speak, to one another, exclude one another, and maintain their distances; while as 'inner' their order is loose and they form a *durcheinander* in which the unity is lost. . . . The two worlds differ, not by the presence or absence of extension, but by the relations of the extensions which in both worlds exist."[3] Bergson, observing the same data, identifies by dialectic the relations with the substance, and rules extension out of the mental world altogether. James goes by experience. For him there is no intuition of thought "flowing as life within us, in absolute contrast with the objects which it so unremittingly escorts".[4] There is no mind-stuff, there is no matter. There are only thoughts in the concrete and there are things, and thoughts in the concrete are made of the same sort of stuff as things are. Even affectional facts, valuations, emotions, and so on indefinitely, do not belong to one realm exclusively, but are by usage determined now to this place, now to that. "If 'physical' and 'mental' meant two different kinds of intrinsic nature immediately, intuitively and infallibly discernible, and each fixed for ever in whatever bit of experience it qualified, one does not see how there could ever have arisen any room for doubt or ambiguity. But if, on the contrary, these words are words of sorting, ambiguity is natural. For then,

[1] *Essays in Radical Empiricism*, p. 3. [2] *Ibid.*, p. 6.
[3] *Ibid.*, pp. 30, 31. *Cf.* also *A Pluralistic Universe*, pp. 253, 254.
[4] *Ibid.*, p. 36.

as soon as the relations of a thing are sufficiently various, it can be sorted variously. Take a mass of carrion, for example, and the 'disgustingness' which for us is part of the experience. The sun caresses it, and the zephyrs woo it as if it were a bed of roses. So the disgustingness fails to *operate* within the realm of suns and breezes—it does not function as a physical quality. But the carrion 'turns our stomach' by what seems a direct operation—it *does* function physically, therefore, in that limited part of physics. We can take it as physical or as non-physical according as we take it in the narrower or wider context, and conversely, of course, we must treat it as non-mental or as mental.

"Our body itself is the palmary instance of the ambiguous. Sometimes I treat my body purely as a part of outer nature. Sometimes, again, I think of it as 'mine'; I sort it with the 'me,' and then certain local changes and determinations in it pass for spiritual happenings. Its breathing is my 'thinking,' its sensorial adjustments are my 'attention,' its kinæsthetic alterations are my 'efforts,' its visceral perturbations are my 'emotions'. The obstinate controversies that have arisen over such statements as these . . . prove how hard it is to decide by bare introspection what it is in experiences that shall make them either spiritual or material. It surely can be nothing intrinsic in the individual experience. It is their way of behaving toward each other, their system of relations, their function; and all these things vary with the context in which we find it opportune to consider them." Empirically and radically then, "there is no original spirituality or materiality of being intuitively discerned".[1]

Even concepts, secondary formations though they are, in substance less than, and in their functions additive to, the experiential flux, are not of another and different metaphysical status. Their stuff is like that of the residual reality. They are the "Natures" in the things experienced, and their *being* is an act that is part of the flux of feeling, while their *meanings* are part of the concrete disjunctions and discretenesses which diversify that same flux.[2] They too have the many-and-oneness which comes in every instance of experience, and are as real as percepts. Percepts and they "interpenetrate and melt together, impregnate and fertilise each other. Neither, taken alone, knows reality in its completeness. We need them both, as we need both of our legs to walk with."[3] Percepts and concepts are consubstantial.

[1] *Essays in Radical Empiricism*, pp. 148, 152-154.
[2] *Cf. Some Problems of Philosophy*, p. 48.
[3] *Some Problems of Philosophy*, pp. 52, 53.

"They are made of the same kind of stuff, and melt into each other when we handle them together. How could it be otherwise when the concepts are like evaporations out of the bosom of perception, into which they condense again whenever practical service summons them? No one can tell, of the things he now holds in his hands and reads, how much comes in through his eyes and fingers, and how much, from his apperceiving intellect, unites with that and makes of it this particular 'book'. The universal and the particular parts of experience are literally immersed in each other, and both are indispensable. Conception is not like a painted hook, on which no real chain can be hung; for we hang concepts upon percepts, and percepts upon concepts, interchangeably and indefinitely. . . . The world we practically live in is one in which it is impossible, except by theoretic retrospection, to disentangle the constitutions of intellect from those of sense. . . . Intellectual reverberations enlarge and prolong the perceptual experience which they envelop, associating it with the remoter parts of existence. And the ideas of these in turn work like those resonators that pick out partial tones in complex sounds. They help us to decompose our percept into parts and to abstract and isolate its elements."[1]

In sum, for James, the fundamental fact is the immediate experience taken at its face value. As such it is a much-at-once, containing terms and relations, continuities and discretenesses, inextricably mingled. There exists a real compounding, so that the empirical individual data, both the substantive and the transitive data, maintain their identities and yet compose larger wholes, present at the same time and in the same way, wholes which are truly wholes and exhibit new characteristics neither implied by nor otherwise foreshadowed in the aboriginal elements of which these wholes are composed. And all of these, although they must be taken temporally, are absolutely co-ordinate matters of being, there existing no one dominant order, no one dominant substance, but a congeries and aggregate of 'natures' and orders, metaphysically the peers one of the other.

VI.

The divergence of this insight, which is the insight of radical empiricism (an insight which does take reality at its face value, absolutely without reservations) from the meta-

[1] *Some Problems of Philosophy*, pp. 107, 108.

physic of tradition, both the 'empirical' and 'rationalist' is patent. Patent also must be its contrast with the Bergsonian philosophy. From that, indeed, its difference extends still more deeply. It reaches out to those perceptions which both great thinkers have so rigorously defended against the enemy, and concerning the reality of which they are unanimous. Those are the perceptions of *activity*, of *freedom*, of *novelty*, of *causation*. By Bergson, these terms are practically equated one with the other, and finally identified with *élan vital* and *durée réelle*. To his thinking, they are, in a word, simply different symbols designating his fundamental metaphysical intuition—real duration, spirit, life. To James they stand for distinct experiential data, co-implicative, perhaps, but not identical one with the other, and certainly not identical with a predominating metaphysical substance. "Taken in its broadest sense any apprehension of something doing, is an experience of activity. . . . Mere restless, zig-zag movement, or a wild *ideenflucht* or *rhapsodie der wahrnehmung*, as Kant would say, would constitute an active from an inactive world." "The word 'activity' has no imaginable content whatever save these experiences of process, obstruction, strivings, strain, or release, ultimate *qualia* as they are of the life given us to be known."[1] And that is all. James denies categorically that he maintains "a metaphysical principle of activity. There is no pragmatic need and scientific justification of one.[2] Now these, "*ultimate qualia*" as they are of life, are all experiences of activity: they are not all experiences of freedom and of novelty. And these words mean that what happens in the world is not pure repetition, which would still be activity, but that each fresh situation comes "with an original touch". Neither do these imply a 'principle of freewill,' for what could it do, "except rehearse the phenomenon beforehand?"[3] They imply simply that in some respects the future is not co-implicative with the past; that there are real and utterly unforeseeable *disjunctive* additions with nothing to link them "save what the words 'plus,' 'with,' or 'and' stand for;" that, to use James's familiar metaphor, reality grows in drops; that future and past are discrete; that activities are plural and not one.

So James is not involved in that Eleatic-Heracleitan ad-

[1] *A Pluralistic Universe*, p. 377; *Some Problems in Philosophy*, p. 212.
[2] *Ibid*, p. 391, note.
[3] *A Pluralistic Universe*, p. 392. That is really what Bergson's *durée réelle* does, since in it everything is somehow foreshadowed and prepared for, though not predetermined. Change is a sort of explication of the implicit or exteriorisation of the internal.

mixture, which is characteristic at once of neo-Platonism and Bergsonian temporalism. For the *poussée formidable* is given all at once and once for all, and it is an act continuous and indivisible and substantial, of which the discrete actions of experience, all the activities designated and enumerated by James, are but spatial corruptions and deteriorations. Creation is individuation of the unindividual, under the shock or opposition of matter. Duration is somewhat different from this creation for it requires that the past shall be both altered and unaltered in an internal and through-and-through addition, which is not altogether an addition, to the 'temporal extent' already given. Genuine *chance* is precluded from such a reality, although unforeseeability, and *freedom* in the Spinozistic sense of the word, alteration that springs out of the *total nature* of the *élan*, are not. Contingency does not reside in the *élan* itself, it resides in the *matter* on which it acts. The *élan* would still have diversified in the direction of intelligence and of instinct; even though the particular natural energy of which it made use were not carbonaceous, and hence no men and no bees and ants were formed. The capacity for them would, of course, still reside in it as a foreshadowing tension; it would simply not have been corrupted toward extension by means of carbon. Such considerations are, however, entirely foreign to James's views of chance or contingency. For him contingency is real here and now and *chance* is genuine immediately. In this, activity becomes co-ordinate and equivalent with causation, as freedom and chance do with novelty.

Now causation, concretely taken, involves for James, as for Bergson, something dramatic, a "sustaining of a felt purpose against felt obstacles, and overcoming or being overcome. The content of 'sustaining' is what it is 'known-as,' nothing more. It is *not* the rejection of either 'final' or 'efficient' causation for a *tertium quid*, but (at least in our personal activities which we most readily experience) the coalescence of both as activity. Such a coalescence is durational. Something persists. But also something is lost, and something is gained. "The activity sets up more effects than it proposes literally. The end is defined beforehand in most cases only as a general direction, along which all sorts of novelties and surprises lie in wait." [1] The novelties and surprises are utter and complete. "In every series of real terms, not only do the terms themselves and their environment change, but we change, and their *meaning* for us changes,

[1] *Some Problems of Philosophy*, p. 213.

so that new kinds of sameness and types of causation continually come into view and appeal to our interest. Our earlier lines, having grown irrelevant, are then dropped. The old terms can no longer be substituted nor the relations 'transferred,' because of so many new dimensions into which experience has opened. . . . Prof. Bergson, believing as he does in a Heracleitan '*devenir réel*,' ought, if I rightly understand him, positively to deny that in the actual world the logical axioms hold good without qualification. Not only, according to him, do terms change, so that after a certain time the very elements of things are no longer what they were, but relations also change, so as no longer to obtain in the same identical way between the new things that have succeeded upon the old ones. If this were really so, then however indefinitely sames might be substituted for sames in the logical world of nothing but pure sameness, in the world of real operations every line of sameness actually started and followed up would eventually give out, and cease to be traceable farther. Sames of the same in such a world will not always (or rather, in a strict sense will never) be the same as one another, for in such a world there *is* no literal or ideal sameness among numerical differents. Nor in such a world will it be true that the cause of the cause is unreservedly the cause of the effect, for if we follow the line of real causation, instead of contenting ourselves with Hume's and Kant's eviscerated schematism, we find that remoter effects are seldom aimed at by causal intentions, that no one kind of causal activity continues indefinitely."[1]

Prof. Bergson, of course, does not believe anything of the sort, since the Heracleitan *devenir réel* is not so real to him as the Plotinian duration which is also *eternity*,[2] and since the continuity, indivisibility, and substantiality of that transcendental and metaphysical change which is real duration, vital impulse, creative evolution, preclude utterly just these empirical descriptions of how change and activity do go on and novelties do arise. His critique of intellectualism, indeed, points to a recognition of the purely empirical character of change, but it is always incidental, and underneath it always stands the firm assumption of the unity of duration, of its diversification into the two inverse movements of spirit and matter and of the composition of the world of actual experience by the confrontation of these two forces.

The main outlines of Bergson's thought are the main out-

[1] *A Pluralistic Universe*, pp. 397, 398.
[2] *Cf. Introduction à la Métaphysique*, and *supra*.

lines of all transcendentalism. The main outlines of James's thought are not prefigured in the history of philosophy. Seeking to build no system, not even an eclectic one, he organises no material in any particular way. He speaks of pragmatism as a *mediator* between rationalism and empiricism, monism and pluralism. He accepts apriorities in thought when they confirm themselves empirically as such; and he rejects dogmas when they do not so confirm themselves.[1] His alliances with traditional empiricism are not stronger than his alliances with traditional idealism. His ultimate alignment must be, as he himself points out, with realism. "Radical empiricism . . . has more affinities with natural realism than with the views of Berkeley or of Mill."[2] Indeed it is naïve or *logical realism*,[3] freed from intellectualistic bias, and restored to that integrity and impartiality of insight which is the source of all that is systematic or dominative in philosophic perception.

[1] *Cf. Principles of Psychology*, II., ch. xxviii.

[2] *Radical Empiricism*, p. 76.

[3] *Cf. Some Problems in Philosophy*, p. 106: "What I am affirming here is the Platonic doctrine that concepts are singular, that concept-stuff is inalterable, and that physical realities are constituted by the various concept-stuffs of which they 'partake'. It is known as 'logical realism' in the history of philosophy."

V.—DISCUSSIONS.

THE CALCULUS OF STRICT IMPLICATION.

THE postulates of a non-Euclidean geometry need differ from those of the Euclidean system at only one point—the different assumption about parallels. But this single difference changes the meaning of "straight," "triangle," etc. (in that it alters their properties), and is thus reflected throughout the whole system. When it becomes necessary to choose between a Euclidean and a non-Euclidean system for purposes of practical application, the following points are worthy of note: First, both are self-consistent systems and their theorems, as pure mathematics, equally true. But they are true of different kinds of space. Second, it may be maintained that our space is actually Euclidean and the non-Euclidean system, therefore, false as an applied geometry. Or one may assert that we can never demonstrate the Euclidean character of our space, because we are able to survey such comparatively small portions of it at one time. But, third, it is conceded on all sides that the Euclidean system is at least more convenient, because it accords with our practical and useful ways of dealing with space-filling objects, and is thus pragmatically the true one.

In a previous paper, I have tried to show that the present calculus of propositions, in the algebra of logic, is to ordinary inference what a non-Euclidean geometry is to our space.[1] In particular, it asserts the presence of implication relations whose existence in our world may be doubted.[2] It is the purpose of the present paper to outline a "Euclidean" calculus of propositions—that is, one which will be applicable throughout to our ordinary modes of inference and proof. For the sake of brevity, this proposed system will be referred to as "strict implication"; the calculus of propositions in its usual form, as "material implication".

The relation of these two sufficiently resembles that of a Euclidean and a non-Euclidean geometry to make the analogy

[1] This journal. N.S. No. 84.

[2] For example, in the two theorems, "A false proposition implies any proposition" and "A true proposition is implied by any proposition". These two theorems were discussed in the previous paper.

worth bearing in mind.[1] Like two geometries, material and strict implication are equally self-consistent mathematical systems; but they apply to different worlds. Material implication, it will appear, applies to any world in which the all-possible is the real, and cannot apply to a world in which there is a difference between real and possible, between false and absurd. Strict implication has a wider range of application. Most importantly; it admits of the distinction of true and necessary, of false and meaningless.

We can best approach the comparison of these two by considering their initial difference. In the system of material implication, there are three important relations of propositions,—implication, disjunction, and product.[2] Any one of these may be stated in terms of any other. Thus 'p implies q'—where p and q are propositions—is equivalent to the disjunction of not-p and q—to 'either p is false or q is true'. This disjunction in turn is equivalent to the negative of a product: 'either p is false or q is true' means 'it is false that "p is true and q is false"'. From these equivalences it is at once evident that p *always* (materially) implies q unless p is true and q false. If p is false, p implies q, whatever proposition q may be; a false proposition implies anything. If q is true, p implies q, whatever proposition p may be; a true proposition is implied by any proposition.

The difficulty lies in the ambiguity of 'either—or'. It seems fairly evident that 'p implies q' is equivalent to 'either p is false or q is true'—'To-day is Monday implies that to-morrow is Tuesday' is equivalent to 'Either to-day is not Monday or to-morrow is Tuesday'. It is also the fact that 'it is false that "p is true and q is false"' is equivalent to 'either p is false or q is true'—'It is false that "to-day *is* Monday and it *is not* raining"' is equivalent to 'either to-day *is not* Monday or it *is* raining'.[3] But, as was pointed out at length in the previous paper, these two disjunctions have, or ought to have, distinct meanings. It is just the defect of material implication that it does not distinguish them. The 'either—or' which is equlvalent to an implication and the 'either—or' which is equivalent to the negative of a product, are not themselves identical or even equivalent. 'Either to-day is not Monday or it is raining'—equivalent to the negative of a product—is *not* equivalent to 'to-day is Monday *implies* that it is raining'. The 'either—or' which is equivalent to an implication is intensional disjunction, the 'either—or' of the dilemma. The dis-

[1] One difference should be noted: a system of geometry gets its methods of proof from logic; a system of logic lays down its own. Hence, a "false" assumption in geometry gives rise to false consequences; a "false" postulate in logic will introduce not only "false" theorems but "false" proofs. This fact complicates the difference of two logical systems. Nevertheless a calculus in logic may be, as pure mathematics, true; as applied mathematics, either absolutely or pragmatically false.

[2] pq, the product of p and q, means 'p is true and q is true'.

[3] De Morgan's theorem.

junction which is equivalent to the negative of a product is extensional disjunction: its distinguishing characteristic is the fact that it is satisfied merely by the truth of one member. The extensional disjunction, 'either Cæsar died or the moon is made of green cheese,' is true because Cæsar died. If p is true, the extensional 'either p or q' is true, however irrelevant the content of p and q.

These two meanings of disjunction may be summarily contrasted. The intensional 'either p or q' means 'it is *impossible* that p and q should both be false; if either *were* false, the other would necessarily be true; the negation of either (strictly) *implies* the other'. The extensional 'either p or q' means 'it happens to be the fact that at least one of the propositions, p and q, is true; it is not true that p and q are both false; the product, not-p not-q, is false'. The initial difference of the proposed system of strict implication from that of material implication is, then, that the former distinguishes these two kinds of disjunction, while the latter does not. If we use $p \vee q$ to symbolize intensional disjunction, $p + q$ for extensional, we may state this fundamental difference as follows:—[1]

1. For material implication,
$$(p \supset q) = (-p \vee q) = (-p + q) = -(p -q)$$
2. For strict implication,
$$(p \supset q) = (-p \vee q) \neq (-p + q) = -(p -q).$$
3. For material implication,
$$(p -q) = -(-p + q) = -(-p \vee q) = -(p \supset q).$$
4. For strict implication,
$$(p -q) = -(-p + q) \neq -(-p \vee q) = -(p \supset q).$$

Obviously if 'either p or q' is a dilemma, then at least one of the propositions, p and q, will be, as a fact, true. Thus the intensional disjunction of p and q implies their extensional disjunction as well. For this reason, the sign of non-equivalence in 2 and 4 may be replaced by the implication sign. But that implication is *not* reversible.

This initial difference, as with two geometries, is reflected throughout the two systems. They have different meanings of 'implies,' and of equivalence, as well as theorems which are different. Even the theorems in common,—that is, those which read identically—have a different significance. This is because a logical calculus is a system not only *of* implications but *about* implications.

The assumptions of the two systems may similarly be exhibited

[1] The symbolism is that of the *Principia Mathematica* of Russell and Whitehead, with certain modifications. p, q, r symbolise propositions. $-$ is the sign of negation. $-p$ means not-p, p is false. $p \supset q$, p implies q. The development of the calculus which we follow throughout is, likewise, that of the *Principia Mathematica*.

together. Since material implication does not properly treat of intensional disjunction at all, its disjunctions will be symbolised as extensional.

Material Implication.[1]	Strict Implication.
M1. $(p \supset q) = (-p + q)$ Df.	S1. $(p \supset q) = (-p \vee q)$
M2. $(pq = -(-p + -q)$ Df.	S2. $pq = -(-p + -q)$
	S3. $(p \vee q) \supset (q \vee p)$
M3. $(p + q) \supset (q + p)$	S4. $(p + q) \supset (q + p)$
M4. $(p + p) \supset p$	S5. $(p + p) \supset p$
M5. $p \supset (p + q)$	S6. $p \supset (p + q)$
	S7. $(p \vee q) \supset (p + q)$
	S8. $p \vee (q \vee r)] \supset [q \vee (p \vee r)$
M6. $p + (q + r)] \supset [q + (p + r)$	S9. $p \vee (q + r)] \supset [q \vee (p + r)$
	S10. $(q \supset r) \supset [(p \vee q) \supset (p \vee r)$
M7. $(q \supset r) \supset [(p + q) \supset (p + r)$	S11. $(q \subset r) \supset [(p + q) \supset (p + r)$

It will be noted that M2-M5 are identical with those opposite them. M6, omitted from the list for strict implication, is entirely consistent with S1-S11 but has very little independent deductive force when S9 is assumed. The larger number of postulates for strict implication is necessary because of the distinction of kinds of disjunction. Also, strict implication seems to have one more indefinable, though this is not really the case.[2]

One main interest in comparison will be to consider the theorems of material implication which are omitted altogether from the proposed system. They throw light upon the meaning of material implication. The most important of them are the following:—

1. $p \supset (q \supset p)$ A true proposition is implied by any proposition.[3]
2. $-p \supset (p \supset q)$ A false proposition implies any proposition.[4]
3. $-(p \supset q) \supset (p \supset -q)$ If a given proposition does not imply any other, then it implies the negative of that other.[5]
4. $-(p \supset q) \supset (q \supset p)$ Of any two propositions, if one does not imply the other, then the other implies the one.[6]

[1] See *Principia Mathematica*, pp. 100, 101, and 116.

[2] Equal by definition is a primitive idea of material implication. For strict implication it is not but is merely the idea of equivalence in general. For material implication equivalence in general means only equivalence of truth value,—$p = q$ means 'p and q are either both true or both false'. Strange as it may seem, this defining relation, equivalence, may, in strict implication, be itself defined as follows,—$(p = q) \supset [(p \supset q)(q \supset p)]\} \{[(p \supset q)(q \supset p)] \supset (p = q)$. This is a very awkward expression but an entirely workable definition which involves only the ideas of 'implies' and of the 'product' of two expressions. In order to use this definition certain changes in the form of the other postulates would be necessary. For instance, S6 would need to be changed to $p\,q \supset p$.

[3] *Prin. Math.*, *2·02.

[4] *Ibid.*, *2·21.

[5] *Ibid.*, *2·52. See also *2·5 and *2·51.

[6] *Ibid.*, *2·521.

5. $pq \supset (p \supset q)$ Of any two true propositions, each implies the other.[1]

6. $-p -q \supset (p \supset q)$ Of any two false propositions, each implies the other.

7. $-pq \supset (p \supset q)$ Of any two propositions, one of which is false and the other true, the false one implies the true one.

8. $(p \supset r) \supset [p \supset (q \supset r)$ If a given proposition, p, implies another, r, then p implies that r is implied by any proposition. One and all these theorems result from converting an extensional disjunction into an implication. They are the consequences of using M6—the "principle of addition" which is true only of extensional disjunctions—and M1 in the same proof.

These are by no means the only theorems of material implication which are likely to seem useless. Others, which are more positively absurd, are usually omitted. For example, $p\,q \supset (-p \vee q)$ and $-(p \supset q) \supset -q$. The first of these may be read, "If p and q are both true, then either p is false or q is true"; the second, "If any proposition, p, does not imply q, then q is false. It is easy to demonstrate that an infinity of such absurd propositions follow from the assumptions of material implication. The significant and useful theorems of that calculus thus appear to be, like Gratiano's reasons, two grains of wheat. That they are not hid in two bushels of chaff is due to the restraining intelligence which manipulates the system.

These theorems are absurd only in the sense that they are utterly inapplicable to our modes of inference and proof. Properly, they are not rules for drawing inferences at all, but only propositions about the nature of any world to which this system of material implication would apply. *In such a world, the all-possible must be the real, the true must be necessary, the contingent cannot exist, the false must be absurd and impossible, and the contrary to fact supposition must be quite meaningless.*

First, the all-possible must be real, because, in material implication, the intensional and extensional 'either—or' will be of identical significance. The disjunction of any two propositions, one of which happens to be true,—'either Cæsar died or the moon is made of green cheese,'—must have the force of a dilemma whose alternatives *exhaust the possibilities.*

Second, the true must be necessarily true, true *a priori*, if "a true proposition is implied by any proposition". A proposition which is implied by any assertion,—*e.g.* the Cartesian "I am,"—is necessarily true. In particular, any proposition that is implied by its very denial is necessarily true, and every true proposition is (materially) so implied. $p \supset (-p \supset p)$ is a special case of $p \supset (q \supset p)$.

Third, the contingent cannot exist, since all facts will be *necessarily* as they are, and the truth about them *a priori*.

[1] *Prin. Math.*, *3·4.

Fourth, the false will be impossible and absurd when "a false proposition implies anything," even its own denial. $-p \supset (p \supset -p)$ is a special case of $-p \supset (p \supset q)$. Every false proposition (materially) implies its own contradiction and is thus proved absurd.

Fifth, the contrary to fact supposition will be meaningless, because, being false, it will be absurd and its contradiction a necessary truth.

Finally, this world will be marked by that ubiquity of the implication relation which is maintained by the "coherence theory of truth". The truth about anything (materially) implies the truth about anything. Is q true or is its negative, not-q, true? Let us take any (irrelevant) fact, p, and note its implications. "If p does not imply q, it implies the negative of q." The fact, p, implies the truth about the matter in question, whatever it may be: "of two true propositions, each implies the other".[1]

The system of strict implication distinguishes the false from the absurd, the merely contrary to fact from the impossible, and the merely true—the contingent—from the necessarily true whose very denial implies it. In strict implication the theorem, "Any true proposition is implied by its own denial," does not appear. But its converse, "Any proposition which is implied by its own denial is true," still holds. $(p \vee p) \supset (p + p)$ is a special case of postulate S7, $(p \vee q) \supset (p + q)$. $(p \vee p) \supset (p + p)$ together with S5, $(p + p) \supset p$, gives us $(p \vee p) \supset p$. Replacing the intensional disjunction, $(p \vee p)$, by its equivalent implication, $(-p \supset p)$, we have $(-p \supset p) \supset p$,—if p is implied by its own denial, then p is true. This theorem might be called the principle of necessary truth.

Similarly the principle of absurdity still holds for strict implication, but does not apply to every false proposition. If we substitute p for not-p and not-p for p in the last theorem, we shall have at once $(p \supset -p) \supset -p$,—if any proposition, p, implies its own denial, then p is false. But the converse, $-p \supset (p \supset -p)$,—if any proposition, p, is false, then it implies its own denial, cannot be proved from our postulates. Hence the contrary to fact supposition need not be meaningless. It does not inevitably imply its own contradiction and thus reduce itself to the absurd.

In this connexion postulate S9, $p \vee (q + r)] \supset [q \vee (p + r)$, is of particular interest. That the merely contrary to fact implies anything is repugnant to common sense. But does the impossible—the absurd supposition—imply anything and everything? And is the necessarily true, whose denial is absurd, implied by any proposition whatever? When we include S9 in our list of postulates, we assume that this is the case, as will appear from the following consequences of that postulate. First, $(p \supset q) \supset (p - q \supset r)$,—if p implies q, then 'p is true and q is false' implies any proposition, r. When p implies q, it is, of course, impossible that p should be true

[1] Two false propositions likewise imply each other because a false proposition is absurd and implies anything.

but q false. The theorem states that this impossibility implies anything. Second, $p \supset -(q - q)$,—that it is false that q and its denial are both true is implied by any proposition, p. That q and not-q should both be true is impossible, and the denial of this, consequently, a necessary truth. The theorem states that this necessary truth is implied by any proposition.

If one object to the notion that absurdities imply anything, and that the necessarily true is implied by anything, then it is only necessary to substitute M6, $p + (q + r)] \supset [q + (p + r)$, for S9, $p \vee (q + r)] \supset [q \vee (p + r)$. This change will eliminate the above theorems and others which have a like significance. Some of these, at least, are exemplified in our everyday reasoning.[1]

If we ask, now, whether the actual world is such a one as material implication may apply to, the answer is not self-evident. Here, again, we are reminded of rival geometries. We do not *discover* the necessity of all facts, nor the absurdity of every contrary to fact hypothesis. Nor are we able to verify that ubiquity of the implication relation demanded by material implication. One may thus maintain that the real is not the all-possible, that reality is, in some part, contingent and not necessary, that the multiverse of things "hang together by their edges," and, consequently, that the system of material implication is false as an applied logic. But an obvious reply has it that this is a generalisation from our ignorance,—that our belief in the contingent and the false but not absurd, is due to the smallness of our ken. A decision on metaphysical grounds would thus be doubtful.

Pragmatically, however, material implication is an obviously false logic. If 'p implies q' means *only* 'it is false that p is true and q false,' then the implication relation is far too ubiquitous to be of any use. If we ask for the consequences of any proposition, we are immediately confronted with all the truths we can think of. If we are so foolish as to make a condition contrary to fact, we must at once accept its own contradictory as the logical result. Not only is such reasoning applicable only to a monistic universe, but it is suited only to infinite wisdom. Indeed, one may suspect that we should feel alienated from even an absolute mind which "reasoned" after this fashion. As has already been said, the few theorems in which the present calculus of propositions clearly reveals its meaning of 'implies'—and the infinity like them which are omitted—are not capable of *any* proper use as rules for reasoning. In order so to use them one would need to know the truth or falsity which the reasoning is supposed to discover. Does p (materially) imply q? Tell us first whether p is false or q true, and we can answer.

[1] For instance, $(p\,q \supset r) \supset (p - r \supset - q)$. Suppose $p \supset r$ and q is irrelevant. Then $p\,q \supset r$, $p - r$ is impossible, and $-q$ might be any irrelevant proposition. This theorem is incidental to Mrs. Ladd-Franklin's "inconsistent triad," and is as old as Aristotle.

Even if we take it to be the case that every truth implies every other, the process of *reasoning* about their relations must follow entirely different paths. It must proceed to ask *how* the one fact implies the other, and this inquiry always turns upon possibilities, which will seem to be wider than the mere facts. Would it be a successful piece of deduction if the instructor enlightened the student in accordance with such rules as the system of material implication affords: "The theorem is true; I've proved it. A true proposition is implied by anything. Therefore your postulates imply your theorem. *Q.E.D.*" And if a calculus of propositions is not good for reasoning — ?

It might be objected that the system of material implication at least contains a multitude of theorems which are practical and useful as modes of reasoning. But alas, it contains so much else! The theorems in question belong also to the system of strict implication. Pragmatically, the advantages are all with this system, because it is fundamentally a calculus of possibilities, impossibilities, and necessities, not simply of facts. Whether or not the universe is such as to satisfy our most rationalistic longings and validate the doubtful theorems of material implication, it is still the case that our logical gropings beyond the present fact must always proceed by way of possibilities and impossibilities. But even if, in the end, one prefer the false simplicity of material implication, this much, at least, remains clear; the present calculus of propositions is only one among a number of such systems, each of which may be self-consistent and a possible choice as an applied logic.

C. I. Lewis.

IS INVERSION A VALID INFERENCE?

To one who has long ago climbed out of the dark and narrow pit of Traditional Logic, it is very pitiful to see others still groping about in its depths. A number of ingenious logicians have been gravely discussing in the pages of MIND whether inversion is or is not a valid inference, and have sought the aid of Euler's circles in order to solve the knotty problem. I have watched them with the same feelings as I should watch a party of astrologers discussing whether the prevailing epidemic of influenza is or is not due to the conjunction of Mars and Saturn in Taurus, and determining the matter by the aid of the triplicities. How long, I wonder, will it take logicians to wake up and realise that the world has gone on and left them behind, and that the contrivances of Traditional Logic, its inverses and obverses, its syllogisms and enthymemes, are as utterly obsolete as the crystal spheres of Ptolemy and the four humours of Hippocrates? A reasoner who should attempt to conduct an argument by any mode of inference taught in Traditional Logic would excite as much wonder and derision as an astronomer who should try to compile the nautical almanack by the crystal spheres of Ptolemy, or a physician who should treat a disease by evacuating the peccant humour. Throughout this very discussion on Inversion, not one of the disputants ever uses any one of the contrivances of Traditional Logic. I look in vain in their arguments for an instance of conversion, obversion, contraposition or syllogising; and the extraordinary thing is that while every logician teaches that these modes of inference ought to be used and must be used in argument, for there are, according to him, no others, yet not only does no logician ever use one of them in his arguments, but also not one logician ever seems conscious of the omission. It is as though every gardener should teach that the proper implement to dig a garden with is a pair of tongs, and yet every gardener should use a spade for the purpose, and never discover that his teaching was at variance with his practice. For practical purposes the syllogism is about as useful as an unreliable apparatus for converting new-laid eggs into stale ones. It cannot be relied upon to do its work, and its work, when done, is useless. If these ingenious gentlemen really want, which I can scarcely believe, to know whether inversion is or is not a valid inference, I commend to them the following passage from my *New Logic*, in which they will find also the converse, the obverse, the contrapositive, and the syllogism discussed with similar results:

'The inverse is arrived at by a method so complicated that I will not trust myself to attempt it, but will take, from a standard text-book, the following example: "Every truthful man is trusted"—Inverse "Some untruthful men are not trusted". Some logicians doubt the legitimacy of this form of Inference [it seems that some of them doubt it still]; and I must confess to misgivings about it, for, if it is valid, I see no reason why it is not equally valid to infer from "Every truthful man is mortal" to "Some untruthful men are not mortal". This puts on inveracity a premium which is scarcely to be expected from the justice of Providence, and what is more to the purpose, does not seem to me to be implied in the postulate.'

Of course I know quite well the scorn with which the professional logician will look upon this exposure of inversion. 'Here,' he will say, 'we have been trying for eighteen months to make a needle stand upright, and we had nearly got it to balance on its point, when in comes a practical ruffian and sticks the point into the table. It is true that the needle does now stand upright, and the aim is in some sort attained, but what a gross violation of the rules of the game! Compare the exquisite deftness and dexterity that would have been needed to balance it on its point with this coarse rough-and-ready proceeding!' To this I answer that if logic is to be looked upon as an elaborate game, to exercise the wits of idle men, and to lead to nothing beyond the barren triumph of solving problems that are useless when solved, well and good: let it be so used. It is then a better game than draughts, and but little inferior to backgammon. But though logicians do not recognise the difference, a game is one thing, and a science is another. There are two ways of doing everything, ways which differ according as we want to get the thing done, or want to find amusement in doing it. If you want the glory and exhilaration and exercise of the chase, why by all means keep your pack of hounds and your stable of hunters, and kill, or fail to kill, your fox in the most tedious, expensive, and uncertain manner you can devise; but if you want to get rid of the marauder who steals your poultry night after night, you will find it more effectual to sit up for him with a gun, or to set a trap, or perchance to lay poison for him. Unsportsmanlike, no doubt, but the practical poultry farmer is not concerned with sport. He cannot afford it. He has his poultry and his living to think of. And the practical reasoner who has to work out the problems of life cannot afford either the time or the brains for the sport of hunting the obverse and the contrapositive and the inverse, and the rest of the logical vermin. His living, and often his life, depend upon his arriving rapidly at correct results in his reasoning, and if he has ever been so unfortunate and misguided as to study Traditional Logic, he knows very well that it will consume an enormous amount of time; that its reasonings, such as they are, can be applied only in a very narrow field, which he is never likely to enter; and that

it is so full of traps and pitfalls that no one who has not spent years in mastering its perplexities can follow its processes with any assurance of using them correctly.

I have nothing to say against the cultivation of Traditional Logic as a game. For my own part, I find it rather dreary, and much prefer chess, which I find more interesting and not more useless; but

> *Chacun à son gout*, no use talking at random;
> We all know *de gustibus non disputandum*.

Traditional Logic has not a shadow of pretence to pose as the science or art of reasoning, and never will have until one of its votaries uses its processes, and conducts his own arguments in accordance with its rules. In the current number of MIND, Mr. Hicks examines the arguments of Dr. Ross and Dr. Rieber, Dr. Bosanquet examines the arguments of Miss Jones, Mr. Latta examines the arguments of Dr. Bosanquet, and not one of the six uses the converse, or the obverse, or the contrapositive, or the inverse, or the syllogism, in argument. Not one! There is no trace throughout the whole of their argumentative articles of any of these logical processes; and in the whole two thousand years of the life of Logic, such a portent as a logician, or any one else, arguing according to the rules of Logic has never yet appeared, except in the formal disputations of the Schoolmen, and even one of these was so impressed with the absurdity of the whole scheme that he proposed as his graduation thesis, *Quæcunque ab Aristotele dicta esse, commentitia esse*. To say that everything that Aristotle wrote is bosh is perhaps an exaggeration, but to apply the same term to the monstrous edifice that has been built upon his *Organon* is not without justification. It is not a term that I should myself use, but I could readily understand and pardon its use by a practical reasoner who should have gone to Traditional Logic for guidance, and should have been presented with inversion as a possibly valid inference.

The game that Dr. Bosanquet and his critics play is a different game. Dr. Ross and Dr. Rieber and Mr. Hicks play with counters which have a certain small value, say a hundred to the penny, and the game has certain rules that they observe; but Dr. Bosanquet and his critics play a game of spoof, the basis of which is that they pretend to understand each other, and so impress the outsider with their profundity. They engage in transactions of enormous magnitude. They deal in huge sums, and pose as mental millionaires; but when their transactions are examined, they are found to be of the nature of cashing cheques on the Bank of Engraving with notes on the Bank of Elegance. They play their game fairly enough among themselves, and neither of them wins or loses, and if they did it would not matter, either to themselves or to any one else. The fun of the game lies in spoofing the outsider.

CHARLES MERCIER.

MR. RUSSELL ON SENSE-DATA AND KNOWLEDGE.

PERHAPS the most important feature in Mr. Russell's theory of sense-data is his belief that "it is not certain that the quality which is the sense-datum ever exists at times when it is not a sense-datum" (MIND, 78).

It is however difficult to see that he has adduced any sufficient reasons to support this belief. Indeed, if we adhere to his analogy in MIND (77), we seem driven to a contrary conclusion. "A quality," he says there, "*becomes* a sense-datum by being given in sense, just as a woman becomes a wife by being given in marriage". But how can a quality *become* a sense-datum unless it already exist prior to its being a sense-datum—*i.e.*, in some sense, when it is not a sense-datum? not to press the analogy further, and to point out that a woman exists before she becomes a wife.

Nor do the arguments employed by Mr. Russell in his *Problems* appear to justify the belief that "there is no good reason to suppose that sense-data exist when they are not sensated" (MIND, 79). "Colour," he asserts (*Problems*, 42), "ceases to exist if I shut my eyes." But we cannot assert this directly and dogmatically on the ground of experience alone. All that experience enables us to assert is, that when I shut my eyes my *sensation* —my awareness—of the sense-datum ceases; and that, as Mr. Russell himself insists, is quite a different matter. To be certain that the sense-datum ceases when my eyes are shut, I should have to devise some means of observing its existence or non-existence while my eyes remained closed.

Curiously enough, in the same passage, Mr. Russell recognises this so far as hardness is concerned (*Problems*, 42). "*Colour* ceases to exist if I shut my eyes;" but, if I remove my arm from contact with the table "the *sensation of hardness* ceases to exist" —not hardness, but the sensation of hardness; whereas, in the other instance, it was colour, not the sensation of colour; *i.e.*, in the one case, the *sense-datum*, in the other the *sensation*, ceases to exist, under similar conditions; and this contradiction must be removed before it can be admitted that Mr. Russell has established his point beyond dispute. This vitiates further Mr. Russell's contention on page 65 of *Problems*. Previous arguments, he says, "proved that a certain *colour* will exist" under certain conditions; but what the previous arguments have proved seems to be that a

certain *sensation* of colour will exist under these conditions; which again, on Mr. Russell's own principles (*Problems*, p. 17) is quite a different thing. His arguments leave the question of the existence of sense-data when not sensated still open.

In consonance with Mr. Russell's view of the existence of sense-data as thus conditioned, is his belief that "sense-data are private to each separate person" (*Problems*, 32). It is however difficult to reconcile with this, his views on knowledge of universals.

Merely, apparently, "by seeing many white patches" (*Problems*, 158) (each private to my own experience) "we learn to abstract the whiteness which they all have in common," and thus become acquainted with whiteness and other universals of the same sort. Even if we accept this theory of knowledge of universals, it seems obvious that it contains nothing which can account for any knowledge of universals outside my own private experience. If the existence of the white patch as a sense-datum is determined to be within my private experience because it is conditional on the activity of sense organs, the only difference between the white patch as a sense-datum, and the whiteness as a universal, is that the latter is conditioned, in addition to the action of sense-organs, by the activity of higher cerebral centres, on which the process of abstraction depends. There is no reason, then, in the process itself, to regard universals as known outside my private experience. But Mr. Russell's conclusion (how reached is not at all clear) is different; for we have (*Problems*, 213) "facts about universals do not have this privacy; many minds may be *acquainted with the same universals*".

It would, of course, be a curious kind of universal about which this could not be said; the point is, that Mr. Russell's insistence on the restriction of sense-data to private experience will not harmonise with his belief in the common knowledge of universals, which somehow arises from that private experience.

Similarly contradictory are Mr. Russell's assertions about our possible knowledge of physical space, and of the relations between physical spaces (*Problems*, 50). As might be anticipated, "we cannot have immediate acquaintance with physical distances"; none the less "we can know the relations required to preserve the correspondence with sense-data" (*i.e.*, of these physical distances). But, as James pointed out long ago, the relations between spaces are themselves spaces; and hence the position becomes, that while we cannot know physical spaces if these be themselves terms, we can know them if they be (as they must be) relations, between physical spaces as their terms.

The same argument will of course dispose of Mr. Russell's distinction between private time as directly known, and public (?) time as not directly known.

The other point on which Mr. Russell insists is the distinction between knowledge by acquaintance, and knowledge by description; and here also it is difficult to see that all his assertions form themselves into a coherent system.

First as to a minor point which may be remedied by altering one or two modes of expression. Mr. Russell insists (and rightly) on the distinction between sense-data and sensations; and states (*Problems*, 52), "sense-data constitute the perceptions of those objects". Then (MIND, 80), he uses perception "as synonymous with sensation"; and the statement in *Problems* becomes synonymous with "sense-data constitute the sensations of objects," which obviously abrogates the essential difference between sense-data and sensations themselves.

Then as regards the precise definition of knowledge by description given in MIND (77). This definition appears fallacious, as including within itself the term to be defined. For if we ask "How is it known that the entity has the property ϕ?" we can only reply, "This is knowledge by description, since knowledge of the entity by acquaintance—the only possible alternative—is *ex hypothesi* impossible". Whence the definition really becomes—"Knowledge by description of the entity x . . . where the entity which has the property ϕ *is already known by description*,"—knowledge whose nature it is the intention of the definition to express.

But, even granting the correctness of the definition, there appear to be contradictions in Mr. Russell's application of it.

"My knowledge of the (physical) table," he says (*Problems*, 74), "is knowledge by description . . . all our knowledge of the (physical) table is really knowledge of truths"; whence it would follow that all propositions concerning the physical table contain descriptions.

Turning to page 91 (*Problems*) we find: "The fundamental principle in the analysis of propositions containing descriptions is this: Every proposition which we can understand must be composed wholly of constituents with which we are acquainted".

Let us test this principle by some of Mr. Russell's own propositions.

Problems, 46:—

"A circular coin has a real shape which is not its apparent shape". *A*.

Ib., 47:—

"Physical objects are in the space of science . . . physical space . . . not identical with the spaces we see and feel". *B*.

Both these propositions refer to objects which are in the same category with the physical table of page 74; therefore propositions

concerning these objects (like those concerning the table) "contain descriptions"; and therefore the "fundamental principle" of page 91 is applicable to them; *i.e.*, they must be composed of constituents with which we are acquainted.

Referring, then, to propositions *A* and *B*, with what constituents of these can we possibly be acquainted? On Mr. Russell's own principles, certainly with none of them;—neither the circular coin —nor its real shape, nor the physical objects, nor the space of science. The alternatives are then,—that we cannot understand these propositions of Mr. Russell's; or,—we are acquainted with their constituents,—which of course he repeatedly denies. That is, in order to understand his own propositions he must sacrifice his own basal principles.

Mr. Russell fully recognises the distinction between what are usually called necessary or *a priori* truths, and contingent truths (*Problems*, 131); but it cannot be said that his explanation of the essential difference between them, and of our knowledge of them, is quite satisfactory.

There is in this connexion a contradiction, perhaps merely apparent, between two assertions on page 139 of *Problems*:—

(*a*) "Our *a priori* knowledge . . . is applicable to whatever the world may contain, both what is mental and what is non-mental".

(*b*) "*A priori* knowledge is concerned with entities, which do not, properly speaking, exist"—

(*b*) here seems to place a curious limitation on "whatever the world may contain"—we must read it apparently as "whatever the world may contain, provided it do not exist".

Mr. Russell's general treatment of *a priori* knowledge (*Problems*, 164) would seem to imply that we can perceive the truth of an assertion dealing with universals, before we know the same assertion to be true of individuals, and even almost before we know that such individuals exist at all.

In his example (163-164) "The statement made is about couple, the universal . . . and *implies* statements about particular couples, *as soon as we know that there are such particular couples*,"—as though, that is, it were possible for us to know the universals and their relations, and then subsequently discover that there are individual couples in existence to which the *a priori* proposition applies.

Against such an implication, however, must be placed Mr. Russell's own theory of the acquirement of our knowledge of universals themselves from that of particulars (158 . . .); and the definite admission (120) that "a certain number of instances are needed to make us think of two abstractly".

In fact, it turns out that *a priori* knowledge is only valid (*as a priori*) in cases where we can experience the terms involved. From analogy with the Brown-Smith instance on page 165 of *Prob-*

lems, it would follow that we cannot know *a priori* that two atoms of H and two atoms of O make four atoms, since we cannot know by experience that there are such atoms. In that case, what is the value of *a priori* knowledge at all?

"It must be taken as a fact," says Mr. Russell (*Problems*, 164-165), "that we have the power of sometimes perceiving such relations between universals"; "as soon as we are able to divest our thoughts of irrelevant particularity" (120) "we become able to *see* the general principle".

But what a complete theory of knowledge and truth should attempt (even if it do not succeed) is surely some explanation of these facts; *why* do we become able to see the general principle? It is very curious how the real simple explanation of the whole "mystery" (given, so far as I know, first by T. H. Green) seems to be either unknown or overlooked. I think I am right in saying that neither in Mr. Joachim's *Nature of Truth* nor in Mr. Wildon Carr's *Problem of Truth* is the solution given; and yet it would almost seem to serve as a touchstone to the conflicting theories of the nature of truth; and its presentation in text-books, and popular books such as Mr. Carr's and Mr. Russell's, would remove a bugbear from the minds of the rising generation of students.

J. E. TURNER.

VI.—CRITICAL NOTICES.

A New Logic. By CHARLES MERCIER, M.D., F.R.C.P., F.R.C.S., etc. London: William Heinemann, 1912. Pp. xxvii, 422.

> We speak of the errors of the past. We, with this glorious present which is opening on us, we shall never enter on it, we shall never understand it, till we have learnt to see in that past, not error, but instalment of truth, hard-fought-for truth, wrung out with painful and heroic effort.
> —J. A. FROUDE.

"LIGHT, from whatever quarter," is the watchword of logical science. From this point of view we may welcome the book now to be discussed, *A New Logic*, by Dr. Mercier, sweeping though his criticisms are of the 'traditional' Logic from which he differs. "From traditional Logic," he says, "I differ in every principle and in every detail . . . its whole system is insufficient, defective, and erroneous from beginning to end. . . . From the Inductive School . . . I differ no less profoundly . . . Modern Logic I confess I do not understand . . . Symbolic Logic . . . is Mathematics gone mad." This perhaps does not sound very promising. Still Dr. Mercier's book is both striking and suggestive. It is the work, not of a professed logician, but of a physician of eminence who has written on psychological, alienist, and legal topics. He desires to set forth the methods by which, as he believes, he reaches conclusions in the practice of his profession, and these appear to him to differ fundamentally from the methods of Traditional Logic.

He reproaches received Logic with being confused, inconsistent, and absurdly limited, and finds fault with its teachings on all the chief topics of the Science, including the doctrines of Propositions and of Reasoning, and he offers us a "New" Logic which is to supply the defects, and correct the errors of the old. All that can be attempted here is a brief examination of some of the new doctrines which he regards as specially important. The book is never dull—the style is vigorous, the illustrations are excellent, at every step we seem to be brought into touch with every-day life and thought.

Let us consider first Dr. Mercier's analysis of the Categorical Proposition, as contrasted with the 'Aristotelian' and 'Scholastic' analyses, the latter being, we are told, "a mode that has endured to the present day and is taught in every text-book of Logic although it is manifestly radically and incurably vicious".

The three analyses are as follows:—

(1) The Aristotelian, which analyses the Proposition into Subject and Predicate, thus: Man-is mortal, A-is unequal to B;

(2) The Scholastic or Traditional, which analyses into Subject, Copula (is, is not, are, are not), and Predicate, thus: Man-is-mortal; A-is-unequal to B;

(3) Dr. Mercier's analysis into what he calls Subject, Ratio, and Object, thus: A-is unequal to-B.

Dr. Mercier does not seem to have observed that in the case of *Man is mortal*, (3) is not a possible alternative to (1) or (2). If he had noticed this, it might have suggested to him that the analysis of *A is unequal to B* which he himself suggests is alternative to (1) and (2) only in the case of propositions of the form that is called Relative—propositions, that is, in which what is affirmed (or denied) is the relation of *two* things (or objects) which belong to *one* system. We could not say *A is unequal to B* unless A and B were *two* objects, one of which *is not* the other. (A) is not equal to (B). It is because Dr. Mercier has felt the inadequacy of the Subject-Copula-Predicate analysis as applied to propositions of the *A is unequal to B* type ('Relative' propositions), in which *A is not B*, that he is so dissatisfied with it. It is because he has not taken into account the very important difference between the Relative type and the Non-Relative S-is-P type of proposition, that he has denounced the traditional analysis altogether, not perceiving that for the S-is-P type, *e.g.* Man is mortal—his own analysis is bound to coincide exactly with the despised Scholastic or Traditional Analysis. So, where what Dr. Mercier calls the 'Ratio' is simply the traditional Copula (is, is not, are, are not, etc), we must either recur to the twofold Aristotelian division, or break up the proposition into the familiar three factors.

As regards Relative Propositions, the S-is-P analysis, though applicable, is not adequate, and is not the most appropriate, and Dr. Mercier is justified in complaining that the treatment of Relative Propositions *as* Relative should so often be tucked away in a corner of a page, and their importance, their extent and their distinctive character slurred over. But he really commits an error analogous to that which he blames in Formal Logic, for while Formal Logic neglects Relative Categoricals, Dr. Mercier neglects the Non-Relative Categoricals. Either omission is serious.

Dr. Mercier is, I think, fully justified (*a*) in claiming that since Traditional Logic holds the predicate of every proposition to be distributed or undistributed, it is in fact bound to admit implicit Quantification of the Predicate, and (*b*) in connecting quantification with the conversion of propositions, "according to the conventional rule". Anyone who admits the possibility and validity of ordinary logical conversion—who allows that (1) All Planets are Stars, may be converted to (2) Some Stars are Planets, but not to All Stars are Planets, admits that the Predicate-term of Categoricals is im-

plicitly quantified, and that the applications of Subject and Predicate are identical. It is one group which is both *All Planets* and *Some Stars*. It is, however, not to be expected that Dr. Mercier should do justice to a reading of propositions which he rejects, and as a matter of fact he inconsistently holds that 'qualitative' terms, such as heavy, mortal, perfect—are destitute of 'extensive' quantity, of denotation. If this is so, how are we to interpret the copula in, *e.g.*, *All men are mortal?* Every term has two, and only two, aspects or moments, the extensive, applicational or denotational (That-ness), and the intensional, qualitative or attributive (What-ness). In this case there are two intensions, and one denotation to which both intensions belong. The *meaning* (the *intension*) of man is *not* the meaning of *mortal*, nor can the extension of *men* BE the *intension* of *mortal*. The only possibility seems to be, that the *is* or *are* of the affirmative Categorical imports identity of denotation between Subject and Predicate; if not, the Copula would have to be negative, for certainly it is only in propositions of the form *A is A* that the *intension* of the Subject *is* the *intension* of the Predicate. This is why Locke declares that all our affirmations are *in concrete*, that though, *e.g.*, we can say: Man is mortal, we cannot say: Humanity is Mortality. And unless it is denotational identity of Subject and Predicate that is indicated by the Copula in affirmative Categoricals, how are we to account for the agreement of Predicates in gender and number with their Subjects, in Latin, Greek, French, German and other languages, which have not lost their inflexions to the extent to which English has? Why say: Ces soldats-ci sont braves, Quelques roses sont blanches, Diese Soldaten sind die tapfersten, Dieses Buch ist das meinige, Diese Rose ist die einzige weisse, and so on? In Quelques roses sont blanches, the only things which we *say* are *blanches* are *ces roses*, though no doubt many other things *are* 'blanc'. We are dealing with Assertion—with the Terms *as they occur and are limited* in the proposition, *i.e.* with Subject and Predicate—*not* with the bare *classes* 'rose' and 'blanc'. We are not using the Predicate in its fullest extension or application, but only as applying to the Subject of Predication, to the denotation of which it is, as so applying, necessarily restricted. Every affirmation, as well as every negation, is determination. It is at any rate clear that Identity of Denotation with diversity of Intension is a condition of 'Synthetic' affirmation which cannot be escaped. In every synthetic assertion the diverse intensions apply to one and the same thing.

What happens to a general name, whether Substantive or Adjective, that is used as Predicate in an affirmative proposition,[1] is that its denotation is fixed by the denotation of the Subject to which alone it is asserted to apply. Such restriction of denotation (and not any alteration of connotation) is the modification imposed on

[1] Compare certain Negative Propositions—*e.g.*, That bird is not *a robin*; Those roses are not *tea roses*; Vos roses ne sont pas *blanches*.

general names when they become Predicates of Propositions. If it were not so, it would not be true that Subject and Predicate in *S is P*[1] propositions have the same application (or denotation)—a statement which it seems impossible to deny.

What general account can be given of Denial, of the import of Negative propositions, on Dr. Mercier's view? I do not see that he gives us any general account of such propositions, and no theory of affirmative import can be acceptable which has not corresponding to it an intelligible theory of negation. I will illustrate the kind of thing I am asking for. If S is P, (SP), is understood to affirm Identity of denotation with Difference of intension,[2] *S is not P* —(S) (P)—asserts Otherness of denotation with difference of Intension[3] and S and P are *two* things (One and an Other) (S) (P), while what *S is P* refers to is *One thing*, (P). And if, *e.g.*, *A is related to B*, then A and B are two things, and the relevant diagram is (A)⟷(B).

On this very simple scheme there is a theory of Negation corresponding to the theory of Affirmation, and it further provides a place for the Relative Propositions which Dr. Mercier considers as of primary—if not sole—importance. But this is only an indication, and in order to deal satisfactorily with propositions of the type *A is related to B, i.e.*, with Relative Propositions, we should need a System of Principles of Relation.

It may be noted that if we start from a question: Is *S is P* true?—we may get an unconditionally Categorical answer: (1) *S is P*, or *S is not P*, or (2) a Hypothetical answer: If M is P then S is P, or (3) a Modal answer: S must be P, S cannot be P, S may be P, S is probably P. It is with Non-Modal, or 'Assertoric' Categoricals and Hypotheticals that Formal Logic has been chiefly concerned. But the seeker has to ask questions—to use Mr. Broad's term he has to 'entertain' the assertion *S is P*—and a categorical answer to his question may be conditional on the fulfilment of some Hypothesis. Or again, the answer which he reaches may be a modal one. Is a Triangle equiangular? It *may* be: If it is not Isosceles or Scalene, then it is equiangular. Are the interior angles of a triangle equal to two right angles? Yes—they must be so. Are the angles at the base of a triangle equal to two right angles? Not necessarily.

Dr. Mercier has some caustic and acute remarks in his second chapter on the relation between Modal and Hypothetical or Condi-

[1] In S is P, S may stand for *All R* or *Some R*, etc., P for *Some Q*, etc.

[2] No doubt a *sameness* of intension may underlie the *difference* of intension, but with that we are not at the moment concerned.

[3] Here again sameness of intension may underlie the difference of intension.

tional Propositions. It seems difficult to combat his contention that Modal Propositions are in some cases Hypotheticals.

The doctrine of Propositions is the central topic of Book I., but in treating Induction and Deduction Dr. Mercier does not seem to be either much guided, or much hampered, by his doctrine of Propositions, and his main position is a thorough-going separation of Induction from Deduction. Induction, which is treated in Book II., he calls Empirical Reasoning, but he will not allow it the title of Inference, which he reserves for Deduction exclusively. While (according to Dr. Mercier) Inference is merely the Logic of Consistency, Empirical (or Material) Reasoning—*i.e.*, Induction—is, he holds, concerned with *Truth*. Its function is to solve questions of fact, and its method of doing this is twofold—that is, it is either by a Direct appeal to Experience—*e.g.* a piece of glass tubing is dropped on a stone floor, and it breaks, or does not break, as the case may be—or by an Indirect appeal to Experience. "The indirect appeal to Experience as I conceive its nature," Dr. Mercier says, "has not hitherto been described or even recognised by logicians either of the Traditional, the Inductive, or the Modern School . . . they do not recognise what seems to be the true nature of the indirect appeal to experience, or that it is the general mode of solving problems."

Dr. Mercier seems to deny that in the direct appeal to experience there is reasoning, and he further denies that in the indirect appeal there is Inference. The reason given for this denial is that "Inference or Deduction . . . cannot stir a step unless a *complete* premiss is given." Now it is no doubt important to recognise the contrasted attitudes of the thinker who is questioning, learning, listening, in search of fresh knowledge, and the thinker who is teaching, or speaking—explicating knowledge of which he is already in possession.[1] But this is not the whole matter. Does the admission that "We have not got Inference unless the Conclusion is necessary from the Premisses," force us to agree with Dr. Mercier that Induction is not Inference? Well, Dr. Mercier himself seems to admit that Induction *is* Inference in this sense, when he admits that in Induction from a single instance there is some further 'warrant' for the conclusion beyond the single instance. "Lurking in the background of the mind is another premiss which is not explicitly mentioned in the argument, but which is in the argument and is essential to the argument. . . . It would be impossible to argue from one case of causation to another, unless it were assumed that in experience causation is constant." If Constancy in Experience means Constancy that is "assumed" and that covers unknown as well as known, future as well as past, and if it is from this assumption that we argue in Induction, the alleged difference between Induction and Deduction with regard to Inference vanishes, and according to Dr. Mercier

[1] Compare *e.g.* Sigwart's, *Logic*, English translation, i., 25, 26.

the only fundamental difference remaining (besides the circumstance that Induction starts with a problem or question) would seem to be that it is limited to true propositions— the "real" or "material" proposition, "that is understood and accepted as referring to real existence, to fact, to an external world which is the world of experience".[1]

Deduction, he holds, "is nothing more than inference from postulates whose truth or falsity is immaterial to the argument" It is of course undoubted that Validity of Inference does not depend upon the Truth of the Premisses, and is only *ex postulato;* still deductive reasoning may endeavour of set purpose to use true propositions throughout an argument, and Induction may on occasion proceed *ex postulato.* Dr. Mercier's insistence on the fact that validity of Inference is quite independent of the truth of the premisses inferred from, may on occasion have its value, though that the fact is adequately recognised by Formal Logic is evidenced by the use made in Syllogistic doctrine of the argument *per impossibile.* This insistence on the *ex postulato* character of 'Deduction' is further interesting in connexion with the interpretation of Hypotheticals. If the proper way of stating a syllogistic reasoning is *not e.g.:*—

M is P
S is M
∴ S is P

M is P
∴ S is P (enthymeme)

A is B (elliptical
∴ C is D argument)

X is A
∴ it is B (elliptical)

but: If M is P and S is M, then S is P
If M is P, then S is P (∵ S is M)
If M is P and S is M, then R is X (∵ Q is S and R is Q and P is X)
If X is A, then it is B (∵ A is B)

then light is thrown upon the character and nature of Hypotheticals, and their relation to Categoricals, and a Hypothetical Proposition appears in the guise of an argument, complete or elliptical, in which we explicitly 'suppose' a premiss or premisses, *e.g.,* If that triangle is isoceles, the angles at the base are equal.

Or take the following case of an elliptical Hypothetical:—

If the Doctrine that Virtue is Knowledge is True, Socrates was a Great Discoverer. This proposition is highly elliptical, and the Antecedent only justifies the Consequent if we are able also to affirm other propositions, thus:—

[1] Compare Prof. Stout's view that in all cases of thinking, "the mental reference is not merely to the fact that the object is present to consciousness, but to some other kind of being which it is thought of as possessing" (*Proceedings of Aristotelian Society,* 1910-1911, p. 187.)

(1) The Doctrine that Virtue is Knowledge is a Very Important Doctrine;

∴ (2) The Originator of the Doctrine that Virtue is Knowledge is the Originator of a Very Important Doctrine;

(3) Socrates is the Originator of the Doctrine that Virtue is Knowledge;

∴ (4) Socrates is the Originator of a Very Important Doctrine.

(5) If the Doctrine that Virtue is Knowledge is True, then the Originator of the Doctrine that Virtue is Knowledge, is the Originator of a Very Important Doctrine which is True;

and (6) Socrates is the Originator of the Doctrine that Virtue is Knowledge;

∴ (7) If the Doctrine that Virtue is Knowledge is True, Socrates is the Originator of a Very Important Doctrine, which is True,

and (8) The Originator of a Very Important Doctrine which is True is a Great Discoverer;

∴ (9) Socrates is a Great Discoverer.

If we consistently stated our Categorical arguments in Hypothetical form (as Dr. M'Coll and Dr. Mercier think ought to be done in all books of Logic), we should have to present Categorical reasonings in which we wish to assert nor only the Validity of inference from premisses, but also the Truth of the premisses, in Hypothetical Syllogisms.

In mitigation of Dr. Mercier's criticism of the narrowness of the 'Traditional' Syllogism, we have to observe that the true principle of Mediate Inference is, in Syllogism, disguised by being presented as applied to *Class* Propositions, to which however it is applied with a skill amounting almost to genius. What is indispensable for Mediate Inference is Identification (of part or all) of the denotation of the Middle Term in one Premiss with its denotation in the other Premiss. That this is recognised by the traditional Formal Logic is shown by the unremitting demand for a Distributed Middle. Such a link of denotational identity is everywhere sufficient to secure connexion between Premisses and Conclusion. In many cases indeed (including the case of all Universals) it is from co-existence of Intensions that we argue to Identity of denotation. It is, *e.g.*, because of the (assumed) connexion between Animality and Mortality that we can say *All* men are mortal; but in cases where the intensional connexion is not known to us, we can still argue safely on the basis of a known denotational oneness which, however, we do constantly on reflexion surmise to depend on (unknown) uniformities of co-existence between attributes— on what Bacon calls *Form*.

In conclusion, I would emphasise once more the two outstanding merits of Dr. Mercier's book: (1) It is not only very readable but genuinely interesting; (2) it does direct attention to important defects of the Traditional Logic which it attacks, *e.g.*, the neglect of 'Relative' Propositions, the narrow scope of Syllo-

gistic reasoning, the loss both to Logic and to Life which results from the frequent failure of logicians to exhibit their Science in vital relation to thought and conduct.

E. E. C. JONES.

Traité de Logique Générale et de Logique Formelle. CH. RENOUVIER. 2 vols. Pp. ix, 397, and 381. Librairie, Armand Colin.

THESE two volumes form the first of Renouvier's three *Essais de critique générale* which are now being republished. Renouvier's work is of some interest at the present time; for he was a convinced finitist, and based a number of metaphysical arguments on his rejection of infinity. It is therefore of interest to see whether his objections have any weight against modern mathematical notions of the infinite with which he was not acquainted. The work is of great (and I think unnecessary) length; it is interspersed with long notes called 'observations and developments' which consist partly of defences and polemics against other thinkers—mainly Mill and Spencer—and partly of further explanations of the author's own views. These notes are often a welcome addition, and perhaps contain the most interesting parts of the book. The second volume, and particularly the last part of it, is probably what will most attract the general philosophical reader.

It is impossible to give a detailed criticism of 780 pages of the most varied matter, and I will content myself with trying to indicate Renouvier's general position and dealing with some special points that strike me as important.

The work claims to be one of analysis of what we can know and do believe ourselves to think about rather than a discussion as to the certainty of belief. All that we can hope to know anything about is representations. These are always two-sided, being analysable into a representing and a represented side; but, though the difference is recognisable, we have not here two existentially separable elements. This does not reduce us to Solipsism, because it is only to representations in general not to *my* representations that human knowledge is confined. And representations do not presuppose substantial selves of which they are states; for, on the contrary, selves are complexes of related representations. If anything could exist apart from being represented it would seem to be such things as extension and duration; but the nature of represented extension and duration (their being continua) is, Renouvier thinks, incompatible with their existence except as objects of re-

presentation, owing to the contradiction which he finds in an actually infinite number. Hence if they exist at all apart from representation they are entirely different from the only extension and duration that we know. Similarly he holds the more generally accepted view that there could be no reason to think that anything exists like the representing side of a representation apart from a represented side too.

Renouvier insists that all that is known is relative (and, so far as I can see) that all that is knowable is relations. Nevertheless analysis does not lead us to an infinite regress, because in the perceptible world we end with irreducible syntheses, and in the world of abstract categories with correlative terms (like part and whole), and the web of relations is a closed one, not one that diverges in infinite lines. The relations of phenomena exhibit a definite order; these types of order are laws, and may be called general phenomena. (His notion of law explicitly includes universals.)

In the third part Renouvier deals with the Categories, which are the ultimate and irreducible laws of knowledge, and, though first recognised in particular experience, are the preconditions of any possible experience. (It is particularly important here to remember his wider meaning of law.) All the categories are syntheses of opposed correlatives, and his list starts with Relation and ends with Personality. In a sense these are the two fundamental ones, because all are special cases of Relation, whilst all involve Personality just because they are laws of representation. All judgments are both analytic and synthetic because all assert identity in some respect together with difference in others. But in a special sense all definitions and all that logically follows from them are analytic (*i.e.* the terms of the judgment can be distinguished but cannot be represented apart from each other). There are *à priori* synthetic judgments too. These assert relations between categories as *e.g.* 'every event has a cause' which asserts a relation between becoming and causation. He holds that all the laws of logic are logically equivalent and are developed out of the principle that you must understand what you are talking about.

Renouvier then discusses the categories *seriatim*. In a number of long notes to the category of quantity he deals with fractional, negative, and irrational numbers, and the infinitesimal calculus. His treatment of Causality and End introduces the notion of Real Possibility. He does not decide the question, but says that logic has nothing to object to this notion. A note to the Category of Personality contains some good criticisms of Associationism, and connects the doctrine of faculties with the irreducibility of the categories.

The last part of the book deals with the limits of science. He first decides that there are no genuine antinomies. The fact that

the categories are syntheses of opposites is not an objection to them, for the opposites are not applied in the same sense to the same things. And, as a convinced finitist, he rejects the antitheses of the Kantian antinomies for contradicting the Law of Number, whilst he finds the theses logically harmless (the arguments against them being mere unjustifiable inductions to the whole of what is true of its parts). The worst that can be said against the theses is that they are incomprehensible; and this seems merely to mean that *e.g.* we can't hope to tell exactly how large the world is or how long it has lasted, though it must have a definite size and have lasted a finite time. It is interesting to note that he thinks that his notion of Real Possibilities frees him from the necessity of assuming a last event, though not from that of assuming a first one. Finally, under the category of Personality, there is a long discussion of such topics as Creation, Emanation, Monism, etc., and Renouvier concludes that the difficulties of assuming a single creative mind at the beginning are insuperable and we are forced to suppose an original plurality of minds, though we cannot know their number or relations, and thus cannot know the ground-plan of the whole universe even if there be one, which, if the hypothesis of real possibilities be true, there cannot be. This, however, cannot affect the validity of the special sciences, and our complete ignorance of the origin of the universe leaves room for all theistic beliefs which do not necessitate a single creative God.

Such is the main argument of this book. It only remains for me to choose a few of the many points that offer themselves for criticism. I propose to say a few words about Representation, The Law of Number, and the Doctrine of Real Possibilities, and to criticise some statements that are made in his treatment of particular categories.

I think Renouvier's main motive in introducing representation at the very beginning of the book is the following: Whatever we can talk or know about must, while we talk and know about it, stand in some relation to our minds (this is of course a tautology, but Renouvier says that we have to begin with tautologies). Hence it seems plausible to say that the real elements of the world given before all analysis are representations and not objects which are reached by analysing them. This seems plausible, but it is not true; what *our* knowledge starts with is not representations but things represented; we do not become aware of represented objects by analysing our represention, but first become aware of objects and then aware that they are objects, and thus one side of a two sided thing called a representation. Thus the ultimate data for us are not representations, nor even objects known as represented, but objects which as a matter of fact are represented but are not at first thought of as such. When we come to notice that all our data in this sense always existed so long as they were data for us

as objects of our representations the further question of whether there is any reason to believe that they and things like them can also exist out of such complexes of course arises. It seems to me that on this last question Renouvier is very inadequate. His argument is that if there are to be things that are not objects of representation they must at least resemble in some respects the objects of our representations or we could know nothing about them. This is of course true in the sense that they must be capable of description in terms with which we are acquainted. He then tries to prove that in the case of all continua the nature of the object is such that nothing like it could exist apart from a representation. But supposing his objection to infinity to be valid I cannot see how he avoids the following dilemma: While we perceive an extended object that object exists. Now either represented extension has a finite or an infinite number of parts. If the former there is no objection to an unrepresented extension; if the latter there is no objection to the existence of an actual infinite, since one actually exists in a represented extension. I understand Renouvier's position to be that even the represented extension is not actually infinitely divided, but that we can simply always think of a smaller piece than we actually are given, whilst what *exists* in the object is only those divisions that are given. But if an infinite divisibility be not a quality of represented extension, but only a result of our thoughts about it, I fail to see why something exactly like represented extension, should not exist unperceived. It is further to be noted that Renouvier has to hold (*a*) that there are minimum distances in the world, and (*b*) that we never perceive them. If then extension only exists when perceived it would be interesting to know who previously does perceive them, and how they exist if no one does so.

This brings us to the celebrated Law of Number of which the author makes so much use. It seems to me quite worthless. All that we are repeatedly told is that an infinite number would be one greater than any given number, therefore an infinite given number is a contradiction in terms (presumably because it would be greater than itself). But why define an infinite number in this way? Suppose you say that an infinite number is greater than any that can be reached by successive additions of one to any finite number, then the contradiction disappears. My impression is that Renouvier always regards an infinite number as the last term of the series of inductive numbers, which naturally leads to difficulties. It should be noted here that Renouvier confuses numbers and the aggregates of which they are the numbers; he tells us that numbers are wholes and their units are their parts. Yet he talks of applying number to other things considered as wholes of parts, so that I suppose he would have to say that the number of inches in a foot is twelve because it is the same as the number of ones in twelve, so that twelve not only is a number but has a number. Yet

Renouvier seems to accept an infinite number of possibilities, because he says that it is not a *given* infinite whole. Let us then consider his theory about possibilities.

I am not at all certain that I understand this; and I am not clear whether the view put forward in various places in the second volume, especially page 115 *et seq.*, is or is supposed to be the same as that which in the first volume explains how represented extension can be called infinitely divisible. Renouvier says that there is nothing contrary to logic in supposing that the future is indeterminate; that most people believe it; and, so far as I can see, that the experimental verification of the law of large numbers is at least a presumption that where we have no grounds for expecting one alternative rather than another the two alternatives are really equally probable in themselves. This would imply that they are in themselves both possible. In one sense I agree with Renouvier. It seems to me perfectly possible that there are events that cannot even theoretically be predicted because they are not connected with any selection of other events by general laws. And I am ready to admit that the distinction between a determined and a partly undetermined event is that the probability of the former relative to all theoretically available data is 1 or 0, whilst that of the latter is intermediate. But I see no reason to accept the very startling view that propositions asserting the occurrence of such undetermined events in the future are not already true or false, and therefore capable of being known by any mind that could be acquainted with the future in the same immediate way as we are acquainted with parts of the past by memory. In the sense that what is going to happen is already definite, determinism is demanded by the Law of Excluded Middle which I see no reason to reject. If I understand him aright Renouvier rejects the laws of logic for propositions about the future if there be real possibilities. I see no reason to do this, and it is hardly compatible with his view that all the laws of logic are developed out of the demand to know what you are talking about. Renouvier sometimes speaks as if an infinity of possibles were harmless, for instance he has the curious argument against an omniscient mind that it could not know all geometry because the number of possible geometrical propositions is indefinite, whilst—I suppose—to know them all would be to have an infinite number of coexisting states of mind. But surely all these propositions are definite and distinct; if the knowledge of them would be an infinite number of distinct acts the propositions themselves must form an infinite aggregate of distinct elements, which ought to be impossible on Renouvier's views. I may possibly be unfair to the author here, for I find his position about possibilities and infinity very difficult to grasp.

I have only space for a few criticisms on particular points. Renouvier fails to grasp the essential difference between an individual and a universal, and thus fails to recognise that there

are two different syllogisms in Barbara. His theory of judgment which professes to avoid the notion of substance seems to me to be much tied to the notion of material things. Thus it is plausible to say that when I call this pillar-box red I mean that redness or an instance of redness is part of a whole complex which I call the pillar-box; but it is much less plausible to analyse 'red is a colour' in this way. If red be a complex it is at any rate a very different kind from a pillar-box, and it is essential for logic not to slur the difference.

In conclusion I would say that the book is well worth reading once quickly all through and then for a second time carefully with large and judicious 'skipping'. A word of praise is due to the excellent print and margins of this edition. There are few misprints, but on page 355 'immortalité' masquerades as 'immoralité':—happily with no disastrous consequences to either.

C. D. Broad.

Pragmatism and Idealism. By William Caldwell, M.A., D.Sc., Sir William Macdonald, Professor of Moral Philosophy, McGill University, Montreal. London, A. & C. Black, 1913. Pp. viii, 265.

When Pragmatism made its first appearance in our midst it proclaimed what seemed to be a clear and definite doctrine. It was not a new doctrine, indeed it was said to be very old, older than Plato, but it sounded strange and it fell with startling abruptness—a sudden splash ruffling the calm, flowing waters of idealism. It came from America but it was proclaimed in Oxford, securing a settlement, welcome or unwelcome, in the very home of authoritative philosophy. It showed no respect to persons or to systems, loudly demanding that every doctrine should justify its cash value, sometimes indeed insisting on the literal sense of the expression. It was a new doctrine of the nature of truth, the doctrine that truth is a value like goodness and beauty. It assailed the logical theories of truth, declared that truth was not logical in the formal sense—the ideal of consistency and harmony—but psychological, dependent on dispositions such as belief, and practical activity such as verification. It came to be known by the short and familiar maxim "Truth is what works". It met fierce opposition from realist and idealist alike, but though the doctrine came in so palpable a shape that it seemed to invite the easy test of a clear issue, those who thought to grasp it and give it its logical *coup-de-grâce* found it as elusive as when one tries to grasp an eel. So now it has come about that pragmatism is seldom spoken of as a

doctrine, it is referred to as a movement or tendency in philosophy. There has fallen on it something like the fate that has overtaken socialism, a doctrine which began with startling revolutionary formulas such as "property is theft" and now has come to indicate every vague aspiration or attempt at social reform so that we can comfortably accept the saying "we are all socialists now". And so here we have Prof. Caldwell in his new book tracing for us the pragmatist movement. Pragmatism is a kind of leaven spreading its influence through the lump. He finds the manifestation of its influence in the most unlikely places, even affecting that high priest of intellectualism, Mr. Bernard Bosanquet, for does not he speak in the Gifford Lectures of *belief* and *conviction* with definite pragmatic meaning? And finally it has produced M. Bergson, "the greatest of all the pragmatists," although it is admitted that there is no actual justification in his writings for classing him among them.

But there are very grave disadvantages in this treatment of pragmatism and it leads to incongruous results. Take, for instance, the three quotations illustrative of the fundamental contentions of the pragmatists that Prof. Caldwell has chosen from William James, Dewey and Schiller (p. 19). They are too long to quote and it is not necessary to do so, it is enough to say that each is a clear statement of the very definite doctrine of the nature of truth that pragmatism proclaims. I am not so rash as to say that they are free from ambiguity or that they indicate all the protean forms the doctrine can assume, but they proclaim a doctrine in striking contrast to the commonly accepted meaning of truth. Now treat this doctrine as a tendency and what becomes of it? A mere commonplace to express any and every recognition that the practical, as distinct from the purely theoretical, reason must be taken into account in philosophy. And we see what it leads to. We have such practical maxims as Prof. Caldwell quotes in a note on page 31 as examples of Catholic Pragmatism set forth as instances of pragmatist doctrine. "When we say 'Jesus is risen from the dead' we mean 'treat Him as if He were contemporary'." An excellent maxim to preach to the faithful, but could any one of the authors just mentioned accept this as an application of their doctrine of the nature of truth? To me it is to empty pragmatism of all philosophical meaning. Let not the reader suppose that this represents what Prof. Caldwell has traced for us in the history of the Pragmatist movement. It is only an illustration of how thin is the *tendency* as compared with the thickness of the *doctrine*. Prof. Caldwell has given a very full and useful account of the individual leaders of pragmatism in the various countries, as well as of the real or fancied effects that the doctrine has had on those who do not profess it or who vehemently reject it.

In his exposition and criticism Prof. Caldwell treats Pragmatism as mainly directed against the correspondence theory of truth. He sees, quite rightly as it appears to me, that the pragmatist theory

is in its essentials a coherence theory, but then he discovers, apparently to his surprise, that idealism was already in the field opposing the correspondence notion with a theory of coherence. "Unfortunately for the pragmatists," he says on page 83, "the rejection of the correspondence notion is just as important a feature of Idealism as it is of Pragmatism." He has clearly failed here to appreciate what was the real objective of Pragmatism when it entered the lists and challenged the prevailing philosophy. It was not directed against the correspondence notion of truth, it regarded that notion as already hopelessly discredited, it was directed against the coherence notion as represented by the idealist theory of the Absolute. Its artillery was trained on the logic, or rather on the notion of an agency in logic, the notion of a creative logic, on which the theory of the Absolute rested.

The fury and rage of that controversy has died down and we can now, as Prof. Caldwell does, attempt to take stock of the gain and the loss. How do we stand to-day? Pragmatism and Idealism he finds are represented by two philosophers who, sharply contrasted as their doctrines are, have neither of them had any part in the controversy. In the recently published Gifford Lectures of Mr. Bosanquet, Prof. Caldwell recognises and criticises what he regards as the most vital and powerful presentment of the case for rationalism, and in M. Bergson's writings he sees the full outcome of the tendency of pragmatism. He accepts neither, but the question of main interest is the relation of Bergson to pragmatism. In what sense if any is Bergson a pragmatist?

I agree that there is a pragmatist element in Bergson's philosophy, but it does not lie in either of the doctrines that Prof. Caldwell in common with many other commentators and critics has indicated. It lies neither in the doctrine of the practical nature and origin of the intellect nor in what is here called activism or actionism (why must we have these uncouth terms?), the doctrine that experience can only be interpreted from the standpoint of action. These are not pragmatist doctrines and their relation to pragmatism is in mere outward appearance only. Bergson's pragmatism is more profound, more fundamental, it is implied in the doctrine of *une réalité qui se fait*. To treat what is sometimes, it seems to me absurdly, called Bergson's attack on the intellect as a pragmatist doctrine is the crowning example of the confusion that follows from treating pragmatism as a movement and not as a definite doctrine. What is Bergson's theory of the intellect? It is that there are two modes of the apprehension of reality, intellect and intuition, that the former has been developed in us in the course of our evolution so that it has become the prevailing type of our activity and serves our activity. What has this to do with the nature of truth? It is as consistent with the notion that truth is correspondence or coherence as it is with the pragmatist doctrine that it is a value or good which we ourselves create. Equally far

from the mark are those who reply to the pragmatists that Bergson's theory is exactly the reverse of their doctrine,—who say that Bergson teaches that not truth but error is the good that the intellect places at the service of our activity. Is it not, they say, by the deformation or distortion of reality, by the illusion of immobility, that our action is rendered possible? It is not truth then but error that works and to know truth we must disembarrass ourselves of intellectual apprehension, reverse the natural bent of our mind, for only in the intuition of life do we possess truth. No. The doctrine that life is the ultimate reality and logic is dependent on the mode of intellectual apprehension is not identical with the pragmatist doctrine that truth is a practical postulate verified in working, nor is it an outcome or product of the pragmatist movement. It is a new standpoint that cannot be classed with pragmatism any more than it can be classed with idealism or realism. But there is a profound sense in which Bergson teaches that we make truth. This is in his doctrine of creation, of freedom, of real becoming. It involves the absolute rejection of the notion of a complete universe either mechanically and materially, or teleologically and spiritually, determined, a universe in which *tout est donné*, in which nothing really new can happen. Reality is making itself. Each of us as part of the ultimate living movement is bringing something new into existence. We are limited on every side and in every direction, but there is freedom at the heart of things, we are centres of indetermination. We are only able to effect anything by narrowing and concentrating our activity and by using as an instrument the *réalité qui se défait* which stands opposed to us, but ultimate reality is not the already made but that which is making. To the extent then that we are a free activity in an open universe we are in the full sense of pragmatist doctrine making truth. If this be the meaning of Pragmatism, if this is what pragmatists with their apparent paradox are really striving to express, then we may agree with Prof. Caldwell that Bergson is the greatest of the pragmatists.

H. WILDON CARR.

De Kennisleer van het Anglo-Amerikaansch Pragmatisme. By T. B. MULLER. Pp. 468. 'S Gravenhage: H. P. le Swart & Zorn, 1913.

PRAGMATISTS are to be congratulated on the accession to their ranks of the author of this book, a young South African of Dutch descent, who promises to become, if one may judge from the zeal of his advocacy, the prophet of Pragmatism in the country of his birth.

Unfortunately, the Hollands in which the book is written will prevent it from finding as many readers among English-speaking students as it deserves. Mr. Muller has not indeed attempted to make any original additions to the Pragmatic Theory, but I know of no more comprehensive and systematic survey of the whole movement. Mr. Muller has done for Pragmatists what, so far, they have failed to do for themselves: from collections of essays, from books and published lectures, from scattered articles, he has gathered their arguments together, marshalled them under suitable headings, and presented them as a coherent whole. His knowledge of the relevant literature, as shown by quotations and references, is exceedingly accurate and extensive. And he writes throughout with the sympathy of one who believes in the value of Pragmatism for present-day philosophy. 'Pragmatism is essential to the reform of Logic.' 'Not Kant, but Pragmatism, has refuted Hume.' These are two of the 'Stellingen' which Mr. Muller undertook to uphold on the occasion of taking his degree of 'Doctor in de Godgeleerdheid' at Utrecht.

After an Introduction, in which Mr. Muller deals out some hard knocks to certain Dutch critics of Pragmatism, he sets himself to expound the real meaning of Pragmatism. In chapter i. the general character of Pragmatism as a 'reaction against Intellectualism' is emphasised, largely by means of a survey of philosophical movements in England during the nineteenth century. Here, among the affiliations of Pragmatism, the author misses a point in failing to recognise the Pragmatist strain in Mr. Bradley. *Quâ* Absolutist, Mr. Bradley condemns all concepts as 'riddled with contradiction,' *âqu* Pragmatist, he acknowledges them to be 'practical makeshifts,' 'devices' which, however 'indefensible,' are none the less 'indispensable'. Pragmatism precisely rejects the former and keeps the latter half of this view: a truth is a device of thought which works successfully in practice.

Chapter ii. deals with the 'Practical Motive'; chapter iii. with the 'Social Influences,' which have *e.g.* given Pragmatism its 'democratic' character. Here, I think, Mr. Muller is a little too ready to endorse the use of the catch-words 'academic' and 'democratic,' as if in philosophy the former were necessarily a term of reproach and the latter of virtue. A philosophy which is nothing but the esoteric amusement of professors is certainly a poor thing. But no less certainly poor is one which cuts its theories down to the measure of the average mind. Mr. Muller has read his Plato to little purpose if he has not learnt that the pursuit of philosophy demands exceptional qualities of mind. Knowledge has degrees; in other words, some minds see deeper into the nature of things than others. It avails nothing to set up against this the minimum which will satisfy the intellectual demands of the man in the street. The point may be put pragmatically. Granted that we all think 'experimentally' and accept as true the theories which 'work' in

our experience, may not some 'successes' be illusory, and some minds too cheaply satisfied? So, again, it is very fine to appeal to 'concrete life in all its fulness' (p. 87) both as the 'starting-point' of philosophy and as the 'test' of all 'abstract' theories. But when we ask in what this fulness of concrete life consists, we get nothing more definite than 'practical activities' and 'immediate personal experience' (p. 86). Now whatever virtue these terms may have as challenging the false abstractness of certain theories, Mr. Muller will probably admit that they are themselves in need of criticism and elucidation. The point is really very simple: some men's experiences are deep and vital and significant, those of others remain shallow and superficial. There is no denying these differences of quality and value, and it makes all the difference, therefore, on what kind of experience we draw for philosophical theory. The current phrase about 'taking experiences at their face-value,' if it forbids discrimination, sets up a false standard for philosophy.

The central portion of the book consists of six chapters on 'Scientific Factors,' setting forth in detail the application of pragmatic methods in Formal Logic, Mathematics, Physics, Biology, and Psychology. Of these sciences Mathematics is, at first sight, the one which seems most remote from Pragmatism in its methods, but Mr. Muller quotes M. Poincaré with great effect in support of the pragmatic character of the fundamental concepts of Mathematics, as against the 'Realism' of Mr. Bertrand Russell, who declares the relation to mind to be 'totally irrelevant'. Here and elsewhere (*cf. e.g.* pp. 56-58 and 369) Mr. Muller makes some interesting criticisms on the position of the Neo-Realists.

The book concludes with three chapters on 'Meaning,' 'Truth,' and 'Ethics, Metaphysics, and Religion'. The last contains the only note of criticism on Pragmatism which I have observed. Whilst acknowledging the value of Pragmatism for religion, Mr. Muller holds that in the theories of Prof. James and Dr. Schiller the consciousness of God is based too exclusively on 'purely moral foundations' (p. 464). In dealing with Truth, Mr. Muller seems to underrate the value of the conception of truth as the 'whole'. It is arguable that the metaphysical conception of an absolute and all-inclusive experience deprives human efforts after truth of all their meaning. But to the theory of scientific, as well as philosophical, method the conception of truth as a self-consistent system has made an important contribution. And it can be so interpreted as to include the Pragmatists' 'working' and 'verification'.

To conclude with a small point: What evidence is there for classing Mr. Joseph among 'Absolutists' (p. 44)?

R. F. Alfred Hoernlé.

VII.—NEW BOOKS.

Encyclopædia of the Philosophical Sciences. Vol. I., *Logic.* Pp. x, 269. Macmillan.

This volume is the first of a series to be issued under the editorship of Sir Henry Jones and Arnold Ruge. The translation of the articles has been well done by B. Ethel Meyer. In the absence of the originals the only criticism that I have to make on her work is that 'Natrium' in Loskij's article is not an English word, but is the German for Sodium. There is also either a misprint or a bad grammatical mistake on page 61.

The book opens with an introduction by Ruge who contrasts and compares the scheme of the series with that of Hegel's *Encyclopædia*. In the existing state of knowledge, he says, we can only expect contributions from various thinkers based on the present condition of the particular sciences, not a complete account of the nature of Reality from a single philosopher. The contributors to this volume are Windelband, Royce, Couturat, Croce, Enriques, and Loskij. All the articles except Croce's have merit, but I do not think that any greatly advances the subject; and the scheme seems to me to suffer from the defect that no writer has space to offer as full an account of his own point of view as he could give (and often has given) in his own works. Much the most interesting contribution seems to me to be Royce's, who alone ventures to say much about induction.

Windelband begins by tracing the relation of Logic to the special sciences, to psychology—descriptive and genetic—and to language. His conclusion is that Logic must take the results and methods of the sciences as in the main sound, but must criticise and compare them. The only connexion with psychology is that unless we have a definite psychological terminology we cannot state unambiguously what kind of mental states are capable of truth or falsehood. The connexion with language is that truth claims to be valid for all men, that this introduces a social reference and so necessitates a definite view about the possibility of unambiguous communication of judgments. He seems to hold that the coherence theory of truth is the one that we must actually use as our test, but that at every stage there lurks behind it a notion of correspondence. I would prefer to say that we all know that coherence is not what we *mean* by truth, but also know that with certain presuppositions it is a good test for it. As to the question of correspondence Windelband says that the relation between the content of valid thought and what exists need not be the same in all sciences. He adopts Lotze's expression of *valid* to describe the mode of being of relations and universals, and holds that these do not exist but are 'the form and order under which what exists is determined'. He then adds that if you insist on ascribing being to such an order you will have to conceive it either as an unknowable thing-in-itself or as psychical. He offers no reasons that I can see for the first alternative. I suppose that he must base his opinion here on some such argument as that of the *Parmenides;* his argument in support of the view that you will have to take relations and universals as psychical seems to be that they only become actual in one sense when actually

thought about. But since he admits that in another sense they are entirely independent of any one's opinions, and that the mind that would have to be assumed is utterly different from ours, I do not see why he should think that people must come to this conclusion which he himself rejects. With regard to the truth of the sciences as a whole his view is that, though we are not directly acquainted in perception with the real world, yet the special sciences do give us genuine knowledge, as far as they go, about fragments of it.

Windelband argues that the Laws of Thought are actual laws of the real world, and that they only have their sense of 'ought' as regards fallible thinkers. This seems to me true, but I cannot follow him in some of his applications of the view. He says, for instance, that in Probability we go against the Law of Sufficient Reason because we there assert without a sufficient ground. But what we really do is not to assert something without sufficient ground, but to assert with sufficient ground that this something has such and such a probability. How otherwise could we talk of justifiable and unjustifiable assertions about probability? There are many other points in the article which might be criticised if space allowed.

Couturat's article on symbolic logic is, I think, rather disappointing. A modern treatment of the subject should certainly tell us more of the doctrine of types, and his definition of the identity of two individuals sins against this doctrine by introducing the notion of all functions. I also seem to detect some confusions. We are told that a judgment is an assertion of a fact; it is true if the fact is real, false if it does not exist. But neither Couturat nor any of the other contributors enter into the difficult question of what false judgments are really about, which is as old as Plato and has been the subject of valuable work in recent years by Meinong, Stout, Russell, and others. On page 149 Couturat suddenly introduces the notions of *the true* and *the false*, and talks of their implications. But he has previously been talking of propositions and their implications; now the true and the false are not propositions but values of them, and he ought surely to give a new definition of implication here or some justification for still using the old one. On the same page there seems to be a confusion between the senses of value. He says that propositions can only have two values (true or false) whilst functions can have an indefinite number. Surely there is no analogy between the truth of a proposition and a constant value of a function.

Couturat connects probability with functions, as distinct from propositions, and defines it as the ratio of the number of values for which the function is true to the number for which it is significant. But surely this cannot be the whole meaning of probability, since the definition is only plausible if you add that all the values are equally probable, and so the definition itself involves the notion to be defined. Neither do Couturat's grounds for denying that probability can apply to propositions (*viz.*, the fact that every proposition is either true or false) seem to me at all conclusive. On page 161 I must note the bad misprint of $<\phi$ for $<_\phi$.

Royce's article is an attempt to exhibit Logic as a science of order. It begins with what seems to me a very excellent account of inductive reasoning. Inductive generalisation cannot depend on such principles as the Uniformity of Nature or the Principle of Sufficient Reason; because these are *general* laws, whilst we know that in particular cases we can generalise and in others not, and the question how far generalisation in a given sphere can be trusted has to be left to the experts in that sphere. I agree with Royce's conclusion here, but I am doubtful as to the validity of his argument. If it be possible to give a general account

of induction at all it must rest on a general principle: his own account does this, though his principle is a law of logic not of the empirical world. His own theory assumes (1) a finite and determinate range of objects, and (2) the notion of 'a fair sample'; but (3) it does not assume laws of nature. If we define a fair sample as one chosen with no special motive it can be proved that more of such samples will closely resemble the whole in composition than not. Hence if you judge the whole from the sample you will be much more often nearly right than not. And the advantage of the expert is that he knows what is a fair sample in his field of work.

It is to be noted that here the definition of a fair sample must have shifted; it was originally defined as one chosen with no ulterior motive, but increasing knowledge of a given sphere will not make you less likely to have ulterior motives in your choice of samples. Royce then applies this principle to the justification of hypothetico-deductive theories. Their advantages are (*a*) that the innumerable mathematical results offer a vast field of samples, and (*b*) the complete definiteness of the concepts used makes the agreement or disagreement of an empirical sample with a predicted result absolutely determinate. I do not think that Royce sees one difficulty that seems to me serious. It is this. The number of results deducible from a mathematical theory is infinite. The number of observable samples is finite. But his original argument rested on the assumption of a limited region to choose from. Does the observed agreement with the results of theory, however far-reaching, really then add appreciably to the probability of the theory without some further assumption?

So far Royce's results have only been connected with order in that it is the order and law of the system of mathematical concepts that make the hypothetico-deductive method so valuable. He next goes into the question of conceptual order more thoroughly for its own sake. There is much here that I should like to criticise if I had space. His difficulty seems to be that, whilst some logical concepts, *e.g.* class, are necessary, in that they are asserted in the act of trying to deny them, others are only suggested by experience. He wants to be able to found all logic and mathematics (*plus* the innumerable non-quantitative sciences of order that he foresees) on purely necessary concepts. And he thinks that this can be done by the development of Kempe's Theory which he made in a paper some years ago. Here he hardly has space to make his theory plausible; I certainly cannot see how logical concepts can be put in terms of acts of rational choice, which I should have thought presupposed them. Those who are interested in Kempe's own theory which is purely logical may be referred to the last volume of Schröder where it is fully stated and discussed.

There are only two points that I need mention about Enriques' contribution. (1) He objects to Peano's distinction between the two kinds of syllogism in Barbara. He says that in the syllogism 'The apostles are 12, Peter and Paul are apostles, ∴ Peter and Paul are 12,' what alters is not the copula but the middle term, which is the class in the major premise and the abstractum of the class in the minor. But, even so, I should have thought that the relation between a sub-class and a class that contains it would probably be different from that between an individual and an abstractum of a class, which would be all that Peano would need. (2) He seems to think that the applicability of the laws of logic to the existent changing world is not absolute, but depends on the fact that many things change very slowly. Surely this is absolutely irrelevant. If nothing in the empirical world were the same at any two moments of time the laws of logic would equally apply to it.

Loskij's article is a plea for Realism. It seems singularlny aïve to us, since he has evidently not heard of the English and American movement in this direction that has been going on for so long now. It is more curious that he does not seem to know of Meinong and his school. He says that the relation of subject and predicate is one of ground and consequent, and is always necessary. In judgments of preception like 'This rose is red,' based on analysing a perceived complex, we do not see the necessity because we fail to see all the intermediate links which are apparently infinite in number. As this makes *all* propositions necessary and as he does not tell us what he means by that word, these results need not greatly disturb us. We are also told that, since logical laws are laws of the object, and since thought merely recognises them, thought cannot go wrong. It is only the substitution of 'fancy' for it that leads to error. Unfortunately no explanation is offered of why we fancy that fancy is thought in such cases.

Finally it is my unpleasant duty to express surprise that an article so offensive in tone as Croce's was included in this book without emendation. No one is under any obligation to read or understand symbolic logic, but, if he cannot do so, he should speak with modesty of distinguished workers in another sphere. To present in a patronising way a travesty of the methods and results of such men as Frege, Peano, and Russell; to refer to them *de haut en bas* as 'deserving authors'; and to congratulate oneself on the habit of a 'decent and comprehensible' mode of expression; —these impertinences can only cover a writer with deserved ridicule, and are singularly tactless in view of the logical leanings of at least three of the other contributors.

C. D. Broad.

Proceedings of the Aristotelian Society, 1912-13. Williams & Norgate. Pp. 375.

The thirteenth volume of the new series of *Proceedings* of this Society opens with a paper on the "Notion of Cause," by Mr. Russell. Bergson comes in for a full share of discussion, points in his philosophy being treated by Miss Costelloe ("What Bergson Means by 'Interpenetration'"), Miss Stebbing ("The Notion of Truth in Bergson's *Theory of Knowledge*"), and Prof. Robinson ("Memory and Consciousness"). There are two papers on volition: "The Nature of Willing," by Dr. Dawes Hicks, and "The Analysis of Volition," by Prof. Hoernlé. Prof. Hoernlé also contributes to a symposium together with Prof. Stout and Mr. Barker on the question: Can there be anything Obscure or Implicit in a Mental State? Miss Jones deals with Dr. Mercier's Logic, Dr. Wolf with the Philosophy of Probability; and there are papers on "Purpose and Evolution," by Mr. Lynch, on "Intuitional Thinking," by Prof. Granger, and on "Kant's Transcendental Æsthetic," by Mr. Carlile. There is also a short abstract of a paper by Prof. Jacks on "Does Consciousness Evolve?"

Mr. Russell's paper severely criticises the current notions held by philosophers as to what scientists mean by the Law of Causation. He points out that necessity has a special reference to propositions considered as values of propositional function which are true for all permissible values of some variable. He then discusses the difficulties introduced into ordinary notions of causation by recognising (*a*) that there are no 'next' events, and (*b*) that to recur an event must be more or less abstract; and points out the many errors that have sprung from assimilating causation to human volition. What the advanced sciences

use are functional interrelations, where there is neither cause nor effect in the old sense of those terms. When we are clear about what is meant by determination (*viz.* functional correlation) we see that the future determines the past as much as the past the future, that a system may have many different sets of determinants, and therefore that even if the world be completely determined mechanically this is no proof that it is not *also* completely determined teleologically. Laws are rendered probable by experienced agreement with them apart from any prior assumption that Nature is uniform, but if you take absolute time as itself a determinant *any* system will be deterministic. Actually scientific laws only involve intervals of time; but at every moment an infinity of previously possible laws are disproved, and the laws of science are merely the simplest of the laws which fit the observed facts up to the present, so that there is no guarantee that they themselves will not be shown by experience to be too simple.

Dr. Wolf's paper deals with somewhat similar subjects to Mr. Russell's. He holds that probability has little meaning for a purely indeterminist world, rather more for a purely determinist one, and most for a world that is a mixture of the two. This last possibility is the one in which common sense inclines to believe. Dr. Wolf admits the difficulty of conceiving a completely indeterminist world, and it seems to me that he himself has fallen into a confusion about it. Clearly it means (and he intends it to mean) a world where there *are* no laws, not merely one where we do not know or suppose there to be any. He denies that in such a world the fact that we had always found A and B together would be any ground for expecting to find them together again. This seems to me false. All that is implied by saying that the world is completely indeterministic is that there are no laws in it. This means that All A's are B's is false. If this be one of our data (*i.e.* if we are supposed to *know* that the world is indeterministic) this will be no ground against our concluding from our experience that probably a large percentage of A's are B's, and therefore that it is more likely than not that any A found will be a B. And if we do not *know* that the world is indeterministic it may be true that our results make it probable that all A's are B's. This proposition will be false indeed, but on given data a false proposition may be more probable than a true one.

The symposium is on a singularly interesting and difficult subject. Mr. Barker argues that it is *a priori* impossible that there should be distinct elements in an object of consciousness which are not recognised as distinct. He therefore concludes that the notion of 'implicit' in such a connexion is a fiction. The notion of obscurity, on the other hand, has a meaning, but it refers to the cognitive value of the psychological object, not to any intrinsic quality of it. Prof. Stout simply rejects the *a priori* impossibility and then produces facts which he thinks can be explained by assuming implicit elements and not otherwise. Prof. Hoernlé contents himself with pointing out certain ambiguities in the phraseology of Messrs. Barker and Stout, and referring his hearers to Mitchell's *Structure and Growth of the Mind* for further information. On the merits of the controversy it seems to me that Prof. Stout is clearly right and Mr. Barker wrong about Stumpf's argument, which I am sure Mr. Barker misunderstood. But I think that in this matter it is important to draw a distinction between what I may call 'characteristics' and genuine elements. It is obviously true that you can be aware of a musical note at times when you are not aware that it is analysable into pitch, quality, and intensity; but these are characteristics, not parts, and it is certainly less clear that you can be said to have been aware of genuine *parts* of a whole when you did not distinguish them Still Prof. Stout

brings forward strong arguments even for the latter possibility, though they do not seems to me conclusive. For instance, the fact that a plot of grass looks different from a piece of green wood though you do not distinguish the separate blades does not surely *prove* that you really perceive the separate blades. Would the facts not be equally explained by saying that we had learnt by experience that visual objects of a certain quality were always connected with physical things which under more favourable circumstances cause the perception of visual objects in which parts are actually perceived? Then such appearances would be connected by association with a judgment that they represented wholes with distinct parts, whilst others (like that due to the green piece of wood) would not. And in general I do not see that the fact that when a sensation is attended to it is not felt to be something quite new is a proof that it was actually present before. It is clear that you cannot strictly *perceive* the newness or oldness of a sensation, but must judge it. This judgment may be based on an actual comparison, but it clearly is not usually, and, least of all, in the cases with which Prof. Stout deals here. Here it seems to me to be rather based on a felt quality of the present perception, and this felt quality certainly gives no proof that the judgment which accompanies it is true.

A word of praise is due to Miss Costelloe's article, which is one of the best expositions of Bergson that I have seen. She is greatly helped by knowing much more about the mathematical views of the *continuum* which Bergson attacks than that author himself or most of his commentators. Interpenetration, she says, means that none of the parts of a whole would be the same if they were parts of any other whole. This however would not prove, as Bergson thinks, that the parts of interpenetrating wholes cannot be classified, unless all resemblance be reduced to identity in difference. Whilst I agree with Miss Costelloe that there is a relation of resemblance as distinct from identity in difference, I think she overlooks a distinction, which, if recognised, would enable her to grant the possibility of classification for the parts of interpenetrating wholes even on the identity-in-difference theory. She takes the identity as that of an element whilst most people take it as that of a quality. I see no reason whatever why the parts of interpenetrating wholes should not be instances of many common universals. Miss Costelloe's objection to the mathematical theory of the *continuum* is not that it is inconsistent, nor that it is possible to state in conceptual terms any other account of what you mean by a *continuum*, but simply that you can see that it does not genuinely analyse the *continua* of which you are directly aware. In one sense I agree; the mathematical account of motion no more describes the object of the *perception* of motion than does the physical theory of light describe what you perceive when you see a colour. But, on the other hand, it seems to me that the mathematical and physical theories tell us about much more important facts in reality than perceived motion and colour. The latter are only of importance as indications of the presence of what the theories do describe accurately.

I have no space to criticise the remaining articles, many of which are of interest. I can only regretfully notice that Mr. Carlile, like so many other philosophers from Lotze downwards, has been led astray about non-Euclidean geometry by Helmholtz's most unfortunately-worded article.

C. D. Broad.

The Meaning of God in Human Experience: A Philosophic Study of Religion. By WILLIAM ERNEST HOCKING, Ph.D. New Haven: Yale University Press. London: Henry Frowde, 1912. Pp. xxxiv, 586.

The author of this monograph does not attempt to develop a conception of God by purely speculative thinking. As the title of the book indicates, it is a study of the working of the religious consciousness, and seeks to show the significance of God in the experience of mankind. In the Preface the author explains at some length his attitude to current types of philosophical theory. In what he terms "Classical Idealism" he discerns a weakness: it does not do the work of religious truth, and it offers us an idea of God which is lacking in spiritual power. The latter criticism seems more relevant than the former. As regards Pragmatism Dr. Hocking is critical, though not unsympathetic. The proposition "whatever works is true" is neither valid nor useful as a test. On the other hand, the proposition that "what does not work is not true" is both valid and important. This negative pragmatism, we are told, is of great value in the field of religion. But the writer rejects the theory that man makes truth, and quite rightly points out that an ultimate deference to what is given is necessary to the religious mind. Dr. Hocking's belief is, that the defects of Idealism and Pragmatism are made good by Mysticism, regarded as the practice of union with God and the theory of that practice.

The book then is a study of the working of religion in order to exhibit its inner meaning. Following out his plan the author, after a preliminary statement, goes on to discuss the part played by ideas and feelings in the religious consciousness. Parts III. and IV. deal with "The Need of God," and "How Men Know God". The concluding parts (V. and VI.) treat of "Mysticism" and the "Fruits of Religion".

The present reviewer must confess that he has found it very difficult to judge Dr. Hocking's book fairly. With many of the positions taken up it is possible to agree cordially, and his remarks often reveal insight and are suggestive. But Dr. Hocking sometimes does not draw a sufficiently clear line between a theory he is discussing and his own theory; and one could often wish his way of putting things was more natural and simple. As an illustration of the latter fault take his mode of stating the truth that religion is anti-individualistic. "Religion holds self-sufficiency in derision; religion is the comprehensive irony of the world toward all Owns. In opening every Art towards itself, it opens each toward every other: through No-art all Arts become one, and one life courses through all of them" (p. 24). Sentences like these are apt to irritate a reader who likes a truth plainly stated.

Religion, says Dr. Hocking, can be best studied in its effects: and the principle is sound, provided you remember that the effects do not take you to the heart of the inner experience from which they issue. There are difficulties, it is admitted, in translating the experience into valid ideas, and this has given strength to the claim that religion may be adequately based on feeling. But an analysis of the relation of feeling to idea does not give support to this view; and it is found to be necessary that religion should express itself in terms of thought. For if ideas work through feelings, feelings in turn are guided by ideas. The writer claims a certain independence for ideas, however; and this leads him to reject any attempt to interpret religion purely through the feelings or the will.

The portions of the volume which deal more directly with the conception of God leave something to be desired in the way of clearness and cogency. Hocking does not accept the idea of God as the all-inclusive whole, and he says the monism of the world is only such as to give

meaning to pluralism. One could wish, however, for a clearer explanation of the relation of the one to the other. The need of unity in the world is emphasised; and it is said we could not live without the Absolute, and God must be the Absolute. But most readers would like a more explicit statement of what is meant by the Absolute than is vouchsafed to them in these pages. On the whole subject of the place and meaning of God in experience we find Dr. Hocking's thought rather elusive, and we are not sure how far we have understood him. God, it seems, is necessarily implied in experience. In experience we are always dealing with a reality beyond ourselves. Yet the object of our knowing is common to all other knowing minds, and it can only be thus common because it is known by an Other Mind. God is the Other Mind which, in creating Nature, is also creating me. He is immediately and permanently known, and it is through the knowledge of God that I am able to know other men. The author devotes a number of pages to the examination of Natural Realism and our knowledge of Independent Reality. We are quite at one with him when he remarks that "an allegation of meaning does not swallow the object into the subject". But, it may be through some defect of insight on our part, after honestly reading what he has to say, in the end we are by no means certain what degree of reality he attributes to the external world, and how he conceives it to be related to God. We may add, that in the treatment of the problem of valuation the function of the subject in conferring values on objects appears to be exaggerated. For important as that office is, it remains true that the whole wealth of values cannot be evolved from the subject: it must partly depend on the intrinsic character of objects themselves.

Dr. Hocking writes at length on Mysticism, to which he attaches a very broad meaning. Here he is dealing with a congenial theme, and the reader will often find what he has to say instructive, as, for example, in his remarks on the principle of Alternation. In concluding this somewhat inadequate notice we think it well to say, that a reader in fuller sympathy with Dr. Hocking's literary manner and style of thinking would probably write more appreciatively of his book.

G. GALLOWAY.

The Education of Self (L'Education de Soi-même). By Dr. PAUL DUBOIS. Authorised Translation, by EDWARD G. RICHARDS. New York and London: Funk & Wagnalls Company, 1911. Pp. 349.

This is a new translation from the latest French edition and supersedes a former translation of the same work which was published in 1909 under the title *Self-Control and How to Secure It.* It seems to be an accurate translation though full of echoes of French idiom. The spelling is American.

The aim of the book is to help moral weaklings, such as those whom the author meets in his neuropathological clinic, to turn over a new leaf. It consists of eighteen essays bearing such titles as "Humility," "Courage," and "Sincerity," and is so far reminiscent of the works of Dr. Samuel Smiles, against which many an Englishman has a doubtless unjustifiable grudge dating from the reluctant acceptance of those volumes as a birthday present at about the age of fifteen. But on dipping into this book the reader is surprised to find that what is urged upon him as an aid to moral improvement is the idea of determinism. This is so curious that many will be tempted to read to the end who might otherwise have laid the volume down. The argument is somewhat as follows:—

By "moral determinism" is meant that we are each of us exactly what heredity and environment have made us. We therefore cannot be blamed in any way for any of our thoughts or actions, nor can we be praised. We cannot praise ourselves, and thus we become humble, we cannot blame others, and so we become tolerant and indulgent. To those who have sinned the author further offers this doctrine as an antidote to remorse, while he assures them that if in the future they keep clearly in mind the evil results of continuing their bad habits, this change in the forces acting on them, produced by his advice, will inevitably make them act in a way different from and better than their past deeds for which he is bound to give plenary indulgence.

The pragmatic test of this has doubtless been applied by Dr. Dubois, whose experience with neurasthenic and neurotic patients is the foundation upon which his book stands: but we imagine that he would be among the first to agree that racial differences might account for this appeal to determinism appearing much less cogent, as we think, to English readers. There is, however, much to be said for it, as a contrast with some of the hortatory ethics of William James may make clear. James's insistence on the power of habits based on transitory instincts is in many ways much the same thing as Dr. Dubois' moral determinism, but the application is curiously different. In his *Talks on Psychology* the American philosopher says: "The drunken Rip Van Winkle, in Jefferson's play, excuses himself for every fresh dereliction by saying, *I won't count this time!* Well, he may not count it, and a kind Heaven may not count it; but it is being counted none the less. Down among his nerve-cells and fibres the molecules are counting it, registering and storing it up to be used against him when the next temptation comes. Nothing we ever do is, in strict scientific literalness, wiped out." Now compare from *L'Education de Soi-même:* "Each relapse belongs to the past periods of life; of the future neither you nor I know anything yet. The faults of our life are like railway accidents: a train is derailed; that belongs to the past, and it is no reason that the next one should also run off the rails. Is it not probable that the pointsman found to be at fault will give more careful attention to his duty in the future?" (p. 207).

James is good for those still virtuous, for his warning may prevent the formation of bad habits. But his words would be rather discouraging, would they not, to poor old Rip if he wanted to reform? To such the words of Dr. Dubois might bring help, though they are unfortunately less true: for the pointsman will not necessarily be more careful if he enjoys accidents and is only going to be punished years hence.

Dr. Dubois mentions suggestion somewhere. The idea of moral determinism which he urges has this disadvantage, that it suggests carrying determinism to a logical conclusion; and then, since this leads either to fatalism or to paradox, the reader is not helped by the book but only bewildered. For here, of course, determinism is not carried to the bitter end, as may be seen from many phrases, such as the insistence on *psychasthenia* instead of *neurasthenia;* or, "Determinism is not a predestination. The future is still unknown" (p. 204); or again, "There are no born criminals, predestined to crime from the beginning" (p. 70). The fact is that determinism is, like the law of conservation of energy, apparently true for the whole universe, but certainly not for any part of it. And just as Dr. Dubois' book may come like an energy-bringing comet into the system of an individual life, and turn habits, like planets, from their accustomed paths, so what in ordinary parlance we call blame and praise may change a life. The reason we blame the young scapegrace but not the weakly plant (*cf.* p. 110) is that we know

our blame may have an effect in the former case but not in the latter: but this book may encourage some to answer:—

> They sneer at me for leaning all awry;
> What! did the Hand then of the Potter shake?

GODFREY H. THOMSON.

Minds in Distress: A Psychological Study of the Masculine and Feminine Mind in Health and in Disorder. By A. E. BRIDGER, B.A., B.Sc., M.D., F.R.S. Edin.; Fellow of the Royal College of Physician of Edinburgh; Fellow of the Royal Society of Medicine of London. London: Methuen & Co., Ltd. Pp. 181.

This small book, which is obviously written out of great wealth of experience, is rather a book of practical direction than of theoretical discussion; but it starts from a somewhat novel standpoint, namely, a reasoned distinction between the "masculine" and 'feminine" types of mind. The mind, according to its duties, may be divided into the conscious, the sub-conscious and the reflex (automatic or organic). In normal persons these three constitute the ego; but they are not to be thought of as separate except for convenience of speech. "There are no fixed and real boundaries, and directly circumstances become unusual the order of this relationship is overthrown and they invade each other's department and provide us with many extraordinary phenomena" (p. 5). There is a general balance of the three constituents, one arm of the balance being "Common Sense" or "common mind" (p. 7). "This consists of our general store of knowledge, a register of our conclusions to date, and though it is being perpetually modified in composition by such new ideas as we accept and absorb, yet is the more stable arm of the balance" (p. 7). The other arm consists of the new impressions flooded into the mind through the whole mechanism of experience. The content of "common mind" and its balance depend upon the individual's relation to current social opinion. When this relationship is in any way affected, the egoistic elements in the constitution tend to predominate: the wholesome check of criticism is removed and there is generated the "hermit mind," which tends to become morbidly subjective. The patient becomes "the victim of self-suggestion, or disorder of the attention, and can only be cured, as we shall see, by one who will completely unravel the tangle and at the same time place and keep the sufferer in the active moving world of normal minds" (p. 12). Mental comfort depends on the preservation of the mental balance between "common sense" (the formed individual conscious mind), and all novel experience that is presented to it. Minds at once fall into "distress" when this balance is broken. In the masculine type of mind, the reasoning, practical faculties predominate. Hence, when, from any cause, the relation of a man to the ordinary social mind is interrupted, he tends to become neurasthenic. The feminine type of mind is predominantly instinctive and emotional. Hence when the balance is broken, the patient tends to become hysterical. This is the fundamental distinction of the book. Chapters are devoted to the characterisation of the masculine and the feminine types. The author is careful not to say "male" and "female"; because, in his view, the masculine type is not confined to the male sex nor the feminine type to the female. His last chapter gives a rough quantitive formula to indicate what proportions are maintained in each type between the ideas relating to self, the ideas relating to others, sensations, instincts, impulses and intuitions, reflex, muscular and

secretory impulsions. The quantities are, of course, only rough guesses to distinguish the types of the normal from the abnormal. The distinction between the masculine and feminine type is certainly vague but some objective characterisation is possible. On the basis of the distinction the author gives many valuable practical hints for the understanding and treatment both of neurasthenia and of hysteria; but these hints are medical rather than psychological. The book is intended to provide rather an orientation for the student of neurasthenia and hysteria than a clinical text-book. It is written with vivacity; it keeps close to practice and, though many points are too dogmatically put to be uncritically accepted, the small book, as a whole, forms a sane and stimulating introduction to the handling of "minds in distress".

The book is merely a sketch; but it is a pity that the writer did not find room for some account or criticism of the Freud psychology, which has at least had sufficient potency to create a school, and to compel controversy and trial wherever neurasthenia and hysteria and melancholia have been seriously studied.

W. Leslie Mackenzie.

Social Powers. Three Popular Lectures on the Environment, the Press and the Pulpit. By Sir Henry Jones, LL.D., Litt.D., F.B.A. Glasgow: James Maclehose & Sons, 1913. Pp. 114. 2s. 6d. net.

These lectures were delivered to different popular audiences, but are governed by one purpose: "to help plain men to realise the significance of the invisible world of moral and social and religious facts by which they live; and to induce a fuller use of earnest thought among them". The book, which is marked by the author's usual felicity of thought and diction, is therefore intended primarily not for students of philosophy but for the increasing number of people who are becoming interested in, and it may be, alarmed by, the moral and social problems of the day. No reader can fail to welcome Sir Henry Jones's enterprise, an adventure prompted by no spirit of moral knight-errantry, but constrained by social circumstances and social needs. Sir Henry Jones has a centripetal interest in the grave and ultimate issues of life, and his social earnestness which has stimulated succeeding generations of students will here reach and influence a wider circle.

The first lecture emphasises the significance of the social environment. The importance of the physical environment we now understand. But we do not yet realise the presence and power of the other environment, all-pervading, intangible, invisible and inaudible. This environment makes us and we make it. The last lecture puts forward an eloquent plea for the recognition of the claims of reason in religion. Unreasoning authority is everywhere losing its power. Will dogmatism in theology survive despotism in politics? Religion as much as morals is a matter of rational judgment. Following natural science, religion ought to repudiate feeling as a criterion of truth. There is only one kind of proof, *i.e.*, organic systematisation, and the facts of religion are as capable of proof as any other facts.

The philosophical groundwork of the addresses amounts to a total repudiation of the *either* . . . *or* hypothesis. We have no right to speak of *either* the individual *or* the State, *either* the man *or* his environment, *either* reason *or* faith, *either* the religious *or* the secular. Strictly philosophical principles, though always implied, are seldom explicitly mentioned. But the author in passing makes clear his position on some of the vexed problems of philosophy. With these statements many of the readers of

the book will disagree, but no fruitful discussion of them can take place till they have been developed and demonstrated as a coherent body of doctrine. It is to be hoped that Sir Henry Jones will see his way to undertake that task.

Instances of oversight in the proof-reading occur on pages 39 and 81. And a quite trivial point, probably due to a printer's error, stimulates curiosity. Why is Aspasia adorned with inverted commas? (p. 53). Has any one had the temerity to suggest that 'Aspasia,' in company with 'Homer' and 'Shakespere,' should be banished to the limbo of exploded superstitions?

G. A. JOHNSTON.

Hypnotism and Disease: a Plea for Rational Psycho-therapy. By HUGH CRICHTON MILLAR, MA., M.D., with an introduction by Charles Lloyd Tuckey, M.D. London: T. Fisher Unwin, 1912. Pp. 252.

This volume, admirably printed, is intended to present "the main features of Psycho-therapy in a form suitable for the intelligent reader of either sex". The author has prodnced a volume well fitted to fulfil his purpose. The exposition is compact and lucid. Dr. Millar aims less at originalty than at explanation to the non-technical, whether medical or not. He includes chapters on the interaction of mind and body, history of hypnotism, phenomena of hypnosis, the psychological aspect, methods, other methods of psycho-therapy (including psycpo-analysis), the psycho-neuroses, treatment or organic diseases, diseases of lost inhibition. There is an index and a bibliography to guide further study. Many illustrative cases are deteiled in the text. Altogether the book is a good introduction to the study of the neuroses and their psycho-therapy.

W. L. M.

An Introduction to Metaphysics. By HENRI BERGSON, Authorised translation by T. E. HULME. Macmillan & Co. Pp. vi, 79. 2s. net.

M. Bergson's classical essay, as most people interested in his philosophy know, is almost impossible to obtain in its original tongue. Consequently an unusually hearty welcome is due to this translation. "Almost every one of the French philosophers in his turn composed his *Discours de la Méthode*, says M. Levy-Brühl, and such is the nature of this essay, although it did not appear until after the publication of *Les Données Immédiates* and *Matière et Mémoire*. Its importance largely consists in its exposition of "intuition". Expounders and critics of Bergson alike have made large use of this essay, and those who read it in full for the first time are likely to find it, like Hamlet, "full of quotations". Mr. Hulme has done a useful piece of work, and done it well. If he had added one or two other articles also difficult to obtain, he would have done still better.

ARTHUR ROBINSON.

Modern Problems in Psychiatry. By ERNESTO LUGARO, Professor Extraordinary of Neuropathology and Psychiatry in the University of Modena. Translated by DAVID ORR, M.D., and R. G. ROWS, M.D., with a Foreward by Sir T. S. CLOUSTON, M.D., LL.D. University of Manchester Publications, No. xlvii. Pp. vii, 305.

The first edition of this book was noticed in MIND, N.S., No. 75. As in this, the second issue, the translators "have not thought it necessary to make any radical alterations in the text," and have confined themselves to "small changes," including errors, it is unnecessary to say more than that the book entirely deserves the success implied in a second edition.

W. L. M.

Aristote. Traductions et Études. Introduction à la Physique Aristotélicienne. Par AUGUSTE MANSION. Louvain and Paris, 1913. Pp. ix, 209.

The first volume of this series of translations and commentaries issuing from the University of Louvain has been already noticed favourably in MIND. M. Mansion's Introduction to the *Physics* forms a worthy sequel to M. Colle's rendering of *Metaphysics A*. Students of Aristotle will be well advised to watch for the promised complete translations of both works. M. Mansion's Introduction deals with the most general characteristics of Aristotle's *Physics* (the view of Nature involved, the distinction between matter and form, the notion of "first matter," the Peripatetic "Hylozoism," the meaning of causality, necessity, chance) in a masterly way only possible to a writer who is intimately at home not only in the text of his author but in all the most important exegetical work, ancient, mediæval, and modern. In our own day there is far too common a tendency among students of both Plato and Aristotle to underrate the worth of exegesis older than the nineteenth century and originating outside the German Universities. It is to be hoped that the devotion of the philosophical school of Louvain to the Angelic Doctor will do much to dissipate this prejudice, so far as Aristotelian study is concerned. M. Mansion is, I presume, a Thomist in general philosophical position; at any rate he writes like a Thomist, but like one who has not failed to profit by modern exposition of Aristotle of every kind from Schwegler to Gomperz. Hence his possession of a living tradition of centuries of Christianised Peripateticism is a pure gain to himself and his readers. If I must note any respect in which his admirable work can be called at all deficient, I should say that he has learned to see almost too much with Aristotelian eyes. Thus he seems to share Aristotle's inability to appreciate the real merits of the Eleatics, and he certainly exhibits something of Aristotle's bias against exact physical science when he charges Plato with having all but wholly neglected the study of *περὶ φύσεως ἱστορία*. This is more than a little hard on the writer of the *Timæus*, the first splendid suggestion of the possibilities of mathematical Physics. Even Aristotle takes Plato's Physics seriously enough to argue against them none too successfully.

Incidentally it may be permissible for the writer of this note to mention a passage in which he has himself fallen under M. Mansion's censure for the statement that Aristotle habitually thought of the integers as *benannte Zahlen* "numbers of" collections of sensible things. M. Mansion calls this (p. 79) an exaggeration, and says that it is not a legitimate deduction from the principle that numbers are only real as accidents of body. "Aristotle admitted the absolute worth" (of numbers) "from the purely objective and logical point of view, though he insisted on protesting against the crass realism which projects the ideal *tel quel* into reality."

I observe, however, that on the preceding page (p. 78) M. Mansion falls into an error, frequently committed by Aristotle, of speaking of "equal" but different numbers. Properly speaking, there are no such things. Every integer B which is not *identical* with an integer A is unequal to A, or, if you deny this, you will be, at any rate, driven to invent entities of which this principle holds, and to say that the class of these new entities, and not the class of "integers," when so defined as to permit of equal but non-identical members, is the object studied by elementary Arithmetic.

A. E. TAYLOR.

A. Cournot, Métaphysicien de la Connaissance. Par E. P. BOTTINELLI. Published by Hachette. Pp. xii, 286.

This work is an introduction to Cournot's philosophical views as developed in the *Essai* and the *Traité*. Cournot seems to me a very lucid writer, and an introduction is hardly necessary except to make him more widely known. M. Bottinelli gives a clear and full account of Cournot's more characteristic doctrines, but he refrains almost entirely from criticising them. Where he does criticise his conclusion is generally that it is Cournot's mode of expression rather than his thought that needs alteration.

An exception, however, must be made in connexion with Cournot's theory of objective chance, where M. Bottinelli holds that there is a genuine error. Cournot's position is that there is objective chance in the sense of mutual independence of laws even in the sphere of mathematics, and that there is objective chance in the sense of spontaneous and unpredictable beginnings in the spheres of history and life. Our author holds (*a*) that Cournot sometimes confused the two meanings and was at any rate liable to make too many concessions to a mechanical view which he actually rejected; and (*b*) that chance has no real meaning as applied to pure mathematics, since it depends essentially on unfulfilled possibilities, and there are none in this region.

In conclusion, I think that M. Bottinelli gives a more Bergsonian turn than is justifiable to some of Cournot's theories by his mode of expression; but it must be confessed that some passages that he quotes tend to support his interpretation.

The book contains a very full bibliography of works by and about Cournot.

C. D. BROAD.

Die Logik als Aufgabe. Eine Studie über die Beziehung zwischen Phänomenologie und Logik. Zugleich eine Einleitung in die Ordnungslehre. Dr. HANS DRIESCH. Tübingen: J. C. B. Mohr, 1913. Pp. vi, 100. 2m. 40.

This volume is complementary to one published in 1912, entitled Ordnungslehre, in which Logic was regarded as based on the concept of order. In the fundamental truth of philosophy, "I think something," that which I think is to be regarded as essentially ordered; and in so far as I ask what makes my experience ordered, I am engaged in a logical investigation. But the question arises, How am I to know that something makes my experience an ordered one? Dogmatism on this question can only be avoided by starting from the standpoint of Phenomenology, which gives, as it were, the maximum of information with a minimum of presupposition.

If, then, starting from this standpoint, we simply examine our experience, we find certain aspects broadly predominant. One fundamental characteristic is, that into everything which is thought enter certain "signs" or "meanings," among which is that of validity with respect to order. Logic simply accepts these signs, and clarifies them. The justification of this view is contained in the present volume. A complete account of the concept of order involves an investigation into the nature of thought. The problem then is, What do we experience when we have the experience, "I think something"?

The discussion of the nature of mental activity here given may, from another point of view, be regarded as supplementary to the biological theories with which Prof. Driesch made English readers familiar in his Gifford Lectures in 1907-8. For mental activity is in principle the same as "life," and in throwing light on the one we throw light on the other.

In order to discover what is contained in the experience "I think something," recourse is had to the work of those psychologists who, mainly under the influence of Külpe, have paid special attention to the psychology of thinking. The point of view of these investigators has been, that in order to get correct results, you must set your subject thinking. The subject has been given a problem (Aufgabe) to solve (*e g.* Is the question of immortality an ethical one?) and asked to state the results of his introspection during the process. When the questions are rightly set, and properly arranged in groups, the various aspects of the thinking process can be disentangled. The influence of the "Aufgabe" is thus fully recognised.

The first thing to be noticed about this work is, that the "act of thinking" (nachdenken) is not observed at all. What the investigators find is, that we have thoughts, and what they describe consists entirely of thoughts. The "activity" which is supposed to produce or guide the course of these thoughts is at any rate not presented as an object. The thoughts seem to come, not as a continuous set leading to the desired result, but rather in a set of discontinuous leaps. The problem to be solved operates rather as a "determining tendency" than as something before the mind. Consequently, to speak of an activity of thought at all, as something which operates continuously, is to complete the observed facts by means of theory. Hence we must first confine our attention to the facts as observed, and see how much they will give us.

What we get, then, is a classification of thoughts. After discussing various classifications, Driesch proceeds to examine into what ultimate elements the experience "I have a thought" can be analysed, and to show that his analysis is in substantial agreement with the results obtained by experimental psychology. He discusses fully only one of the elements—that of meaning. We may indicate the result as regards meaning somewhat as follows. Every thought presents certain characteristics or signs which can be classified and thus reduced to certain ultimate signs. It is commonplace to say that we never "think of" a number, or a chair, without some purpose, *i.e.* relation to some intellectual problem. In relation to this problem, every thought (*a*) is itself systematic, and is recognised as such. It is ordered, and brings order into the experience into which it enters. (Endgultigkeitszeichen mit Rücksicht auf Ordnung, or Ordnungszeichen.) Again, (*b*) it is more or less satisfactory, *i.e.* it can be accepted to a greater or less degree as bearing on the problem (Erledigungszeichen); (*c*) it has a certain temporal character (Zeitzeichen), and (*d*) it takes its place within a certain "sphere" or universe of discourse, and bears this mark (Erlebtheitskreis-zeichen). These marks make up the meaning which every thought possesses. For Phenomenology they are ultimate and independent. But in relation to

Logic they can be regarded as particular forms of "order". Every thought is thus predominantly a systematising or ordering agent.

Thus observation gives the result: To have a thought is to have an "ordering" in relation to a problem. To think is to work under the "determining tendency" of the problem of order. "Erleben = Denken = Sparsamordnenwollen" (p. 93, n. 2). "Denken heisst geradezu unter der Aufgabe *Ordnung* stehen" (p. 94). More explicitly, "Ich erlebe Gedanken" is the same as, "Ich erlebe Aufgabenlösungen mit Rücksicht auf die Aufgabe *Ordnung*" (p. 94).

This is true of all mental activity. Willing is only a special form of thinking as thus described; indeed, solving problems by means of ordering is the fundamental character of all life (which can be described *as if it were* an attempt to order).

Thus "order" is the fundamental concept for Logic which must be accepted as it stands. The problem of Logic is simply to discover the different kinds of order. Since each thought bears a sign of order (not self-evident in the sense of infallible, though it seems as if it must be accepted as such for the time being) it would seem as if Logic is simply to classify these signs. If we ask what order is, the reply will be, "It is that which every living being is set to do. It is the problem of problems. "It is the 'ultimate determining' tendency under which we all stand" (p. 90). The ordinary man throughout life needs and strives after order more than he strives after anything else, and in doing so he gains a Logic, which however is fragmentary, and self-contradictory. The logician will arrive at his Ordnungslehre in substantially the same way: he will clarify his experiences (all of which are "problem-solvings"), with special reference to the mark of order which every thought bears (p. 91). It is only by ordering that you can arrive at a Logic; and similarly every ordering (*i.e.* every act of a living being) can be described, from one point of view, as a step towards the construction of Logic. Progressively to solve the problems which life presents is progressively to realise an Ordnungslehre.

The recent work on the psychology of thinking, which bulks so largely in this book, is scattered through various periodicals, and stands in need of co-ordination, as each investigator tends to elaborate his own set of technical terms; and it is one of the merits of the present book that it endeavours to effect this co-ordination. The value is enhanced by the excellent remarks as to the dangers to be guarded against in psychological investigation, and by the discussion of the precise way in which Logic and Psychology can aid one another, when once both are based on their common ground, Phenomenology.

L. J. Russell.

Aristoteles Lehre vom Ursprung des Menschlichen Geistes. Von Franz Brentano. Leipzig: Veit & Co., 1911. Pp. viii, 165. Six marks.

This book is a second edition of the author's work, *Über den Creatianismus des Aristoteles* (1882), greatly augmented by a reply to Zeller's criticism of the earlier work (reprinted in Zeller's *Kleine Schriften*, vol. i.). The object of the book is to show that Aristotle believed, not, as Zeller holds, that each man's reason has existed from all eternity, but that it is created by God and implanted in the embryo at some moment of its development.

Two great merits may be freely conceded to Brentano. He has a very thorough knowledge of Aristotle's works, and he shows great acuteness and ingenuity in their elucidation. Time after time he is able to show that

Zeller has missed some more or less important distinction which should be drawn in interpreting the text. Where Brentano is somewhat lacking is in power of judgment. He is often in danger of not seeing the wood for the trees; Zeller's greater common sense has enabled him to see better than Brentano the significance of many passages which he has evidently studied with much less care.

Brentano deals first with certain passages which in Zeller's opinion teach or imply the pre-existence of reason. The first is the famous passage of the *De Anima*, 430 a 22-25. Zeller supposes Aristotle to be giving the reason why in this life we do not remember the previous life of reason; and if this be the meaning the passage is of course conclusive for his view. Brentano points out that this is not necessarily the right interpretation, and with this we agree. If that were the meaning, *ἀθάνατον* and *φθαρτός* would be irrelevant; *ἀγένητον* and *γενητός* would be the appropriate words to use. Brentano's own explanation of the passage as referring simply to the fact that we do not *always* remember what we have once known is however less probable than the interpretation to which *χωρισθείς, ἀθάνατον, φθαρτός*, the parallel passage 408 b 27, and the opinion of Themistius and Philoponus alike point, that Aristotle's meaning is that memory ceases with the death of the body and the destruction of the passive reason. But really discussion of the meaning of *οὐ μημονεύομεν* is beside the point; for the words *τοῦτο μόνον ἀθάνατον καὶ ἀΐδιον* are fatal to Brentano's theory. Aristotle is chiefly dwelling on the fact that *νοῦς ποιητικός* does not *die*, but *ἀΐδιον* clearly goes beyond this and must refer to the past no less than to the future. Brentano's attempt to whittle away the meaning of *ἀΐδιον* is quite unsuccessful.

He passes next (we may omit the unimportant passage, *De An.* 410 b 14) to another famous passage, *De Gen. An.* 736 a 31-b 29, the passage ending with the words *λείπεται δὲ (? δὴ) τὸν νοῦν μόνον θύραθεν ἐπεισιέναι καὶ θεῖον εἶναι μόνον*. He has a long and acute discussion of the passage, but all that he establishes as regards his main point is (what Zeller expressly admits) that it is not absolutely implied that reason *προυπάρχει*. The passage has several loose ends; it offers an elaborate classification of possibilities which is not properly followed up, and *προυπάρχειν* comes in one part of the classification and *θύραθεν ἐπεισιέναι* in another. But that in the end Aristotle regards these two as coextensive, though not identical, seems clear. The passage confirms, though it does not prove, Zeller's theory.

Brentano next tries to show that Aristotle expressly denies the pre-existence of reason. He relies here on a single passage, *Met.* 1070 a 21-26, where Aristotle says *τὰ μὲν οὖν κινοῦντα αἴτια ὡς προγεγενημένα ὄντα, τὰ δ' ὡς ὁ λόγος ἅμα*, but admits that some formal causes may outlast their effects, and gives the reasonable part of the soul as his instance. Brentano takes this to imply that it does *not* exist *before* its effect, *i.e.* the individual life, but Zeller seems clearly right in taking *αἴτια* as part of the predicate (it probably belongs to both subject and predicate), so that the point is that while efficient causation *implies* the existence of the cause before the effect, final causation does not. The pre-existence of reason then would not be denied, but only said not to be implied in its being the formal cause of life. It is noticeable, however, that while Aristotle here as well as in *De An.* 408 b 27, 430 a 23, refers expressly to the life of reason after death, he nowhere refers expressly to its life before birth. It may be simply that the one question interested him, and was likely to interest his hearers, more than the others, but one may conjecture that possibly he thought that reason retains after death a sort of individuality which it had not before birth, though an individuality unaccompanied by memory or emotion.

Brentano next tries to show that Aristotle definitely teaches that the reason is created at a certain stage of the fœtal development. His main evidence for this is the passage already referred to, λείπεται δὲ τὸν νοῦν μόνον θύραθεν ἐπεισιέναι καὶ θεῖον εἶναι μόνον. He argues that θεῖον here must mean 'derived from God,' but though this meaning would suit the argument excellently, the assignment of this rather special meaning to so vague a word as θεῖον must be somewhat speculative, and the occurrence of the comparative θειοτέρου a little later (736 b 31) suggests that the word refers to the nature rather than the origin of reason.

Brentano's attempt to make metaphysical capital out of the very general statement in *E. N.* 1162 a 6, is equally unsuccessful. And *De An.* 430 a 20, 431 a 1, suggest not so much the *creation* of the human reason by God as the temporary *manifestation* of the divine reason under limiting conditions which render it not always actual, the *kenosis*, as it were, of the divine reason.

The next part of Brentano's argument is an attempt to confirm his 'creationist' theory by showing that Aristotle believed the heavenly spheres and the spirits that move them to be also created by God, though not at a particular time like the human reason but from eternity. In point of fact Aristotle has left us almost entirely in the dark with regard to the relation of God to the spheres and their movers. It seems clear, however, that the notion of eternal creation is not to be found anywhere in Aristotle, and that the universe is for him unified not (to use a distinction which he introduces in another connexion) by being ἀφ' ἑνός but by being πρὸς ἕν, by aiming at God as its central object of desire. In particular the spheres in so far as they have ὕλη cannot have been thought of as created by God, for ὕλη is what making presupposes and what therefore cannot be made. Further, Brentano's attempt to show that the Aristotelian Deity, though directly thinking only of itself, thinks indirectly of the whole detail of the world's history as of something flowing from the Deity's own nature, and produces that history in the manner of an efficient cause, is plainly unsuccessful. If *Metaphysics* Λ tells us anything, it tells us that God's thought is a thinking on thought *and on nothing else*, and that God moves the world only ὡς ὀρεκτόν. These views are difficult enough to understand, but there is no escaping the fact that they are Aristotle's views.

The remaining two sections, in which Brentano argues that the doctrine he ascribes to Aristotle is more in accordance with the views of Plato on the one hand, of Theophrastus and Eudemus on the other, than the 'pre-existence' doctrine, are of subsidiary importance. Nor would it be worth while here to offer any account or criticism of the extremely interesting discussions of many important Aristotelian questions which are to be found in the later part of the book. If we are compelled to disagree with the author on the main question, we are left full of admiration of his learning and his acuteness.

W. D. Ross.

Das genetische Prinzip. Versuch einer Lebenslehre. Von August Ludowici. München: F. Bruckmann A.-G., 1913. Pp. 299.

The study of every living thing reveals two ever-present sets of factors. One is the environmental (*die ökologische Faktoren*), the set of outer conditions in and through which it lives, the other is the "genetic," the stable characters of species or type which it inherits and passes on to its offspring. The two sets may seem in a sense opposed or antithetical, inner standing over against outer factors, but they are in truth the *polar*

elements of the unity of life, distinguishable in our analysis but forming in their relation to one another an indissoluble whole. Life is a unity of stable (identifiable with genetic) and variable (identifiable with environmental) factors. If we only understand that these are polar factors within *every* whole of experience, that inner and outer, continuum and discontinuum are meaningless apart, outside of each organic unity in which they are revealed, we shall have solved many pressing problems both of the biologist and of the philosopher. The method of solution thus pointed out may be called "the genetic principle".

Pursuing this principle the author first analyses the organic individual. Here his starting-point is the doctrine of the stability of the germ-plasm, with its corollary that all variation (Veränderung) is possible only through the working of environmental factors, the genetic factors remaining constant and alone heritable. Unlike the protagonists of this doctrine the author bases it primarily on the Mendelian law. That law reveals the genetic elements (die Gen) as remaining true and changeless through the generations. They mingle and thus form variations, but they are not thereby modified themselves, for in another generation they reappear in their original distinctness. The heritable factors remain pure, and on this side every individual is a revelation of his type. But he is at the same time an individual, for he is a unity of the constant and the variable, he is always a unique resultant of genetic and environmental factors.

The whole of the succeeding discussion is based upon this biological analysis. We may therefore pause to notice briefly certain difficulties involved in it. In the first place the Mendelian law has in fact been found applicable only to a limited number of very specific characters, and it seems unwarrantable to give it a universal extension. The term "Mendelian" applies not to a universal law of heredity but to a unique and limited series of phenomena within the sphere of heredity. (It is significant how little the main body of Weismannists, whose doctrine comes here very close to that of our author, rely upon it.) Again, it is doubtful if the author's insistence on the unity of the individual really solves, as he supposes, the problem as between Lamarckians, "who have their standpoint on the side of the environmental factors," and the Weismannists, "who stand on the side of the genetic factors". Both parties might I fancy well accept the principle in question and still remain opposed. In his last chapter the author discusses explicitly the old issue of the "inheritance of acquired characters," and finds that the problem is in that form insoluble because wrongly put. One could wish that he had definitely correlated the later discussion with the earlier.

After the analysis of "the individual" the author proceeds to analyse "reason" (*Vernunft*)—or rather to show that the distinctions he has just been drawing in the organic sphere are applicable to the Kantian analysis. He works out a close and interesting analogy between the factors which analysis discovers in the individual as organic and those of the individual as thinking being. In both the same polar antithesis is revealed. *Sinnlichkeit* and *Verstand* are polar functions in the unity of thought, the former on the side of the environmental and variable, the latter on the side of the genetic and stable. *Eindruck* and *Begriff* are similarly related, and correspond respectively to variety and type within the organic. Finally *Erscheinung* and *Idee* are the poles of experience even as birth and death are the poles of life.

It may already be noticed that the author tends to strain after analogy. This tendency unfortunately becomes more pronounced with each successive chapter, and finally leads him into absurdities. Thus in the analysis of the "world" (Welt) which succeeds the analysis of

reason we find atom and electron, quantity and quality, future and past related as polar opposites on the side of the "genetic" or stable and on that of the environmental or variable respectively. Why, for instance, the past should belong to the side of the variable and the future to that of the stable passes understanding. And this is but one instance of a constant vain striving after uniformity which renders much of the latter part of this work valueless, and very nearly leads one to forget the genuine insight and keenness of analysis which characterises the earlier part. The author seeks to build up a formally symmetrical system of the universe which in the end looks more like a child's play-house than the scheme of things entire.

Yet although as an endeavour after a complete *Lebenslehre* the work breaks down, it makes some valuable contributions to its object. One might point out especially the important passages in which the author shows the falsity of certain antitheses which are apt to dominate the thought of both biologist and philosopher. Birth and death, he points out, are the termini of life just as north and south are the poles of the earth. Now we would never dream of drawing an antithesis between, say, north pole and earth, and it is equally false to regard life and death as antithetical. The true antithesis is birth and death. "The true opposite of life is not-life. They both belong to superindividual nature; but death and birth are always only personal." So with being and becoming. Being corresponds to life, becoming corresponds to birth, and its true opposite is thus not being, but passing (*Vergehen*). "Just as life makes possible the synthesis of birth and death, so must being reconcile becoming and passing." So again with freedom and necessity in the moral sphere. There is no antinomy here. Necessity is the whole, it is nothing else than Nature herself. The opposite of freedom is compulsion, and these two again are as poles of the moral life, compulsion on the side of the variable and environmental, freedom on the side of the stable and genetic.

If it is permissible to regard this work as an early or first work, it is full of promise. The style is unusually pleasant and free, and the author's thought is wide enough to find philosophical inspiration both in contemporary science and in the classical poetry of Germany.

R. M. MacIver.

Menschen- und Weltwerden. Ein Beitrag zur Geschichte der Mikrokosmusidee. Konrat Ziegler. Leipzig and Berlin, 1913. Pp. 45. (Reprinted from *Neue Jahrbücher für das klassische Altertum-Geschichte und Deutsche Literatur*, xxxi, pp. 529-573).

A useful study of the famous myth put into the mouth of Aristophanes in the *Symposium*. The author shows by careful comparison the close kinship of the speech of "Aristophanes" with the myth told by the "stranger from Elea" in the *Politicus*, and demonstrates that both have a common origin in a form of the Orphic cosmogony not precisely corresponding with any of those which have been preserved for us outside Plato. Apparently he is unacquainted with Adam's edition of the *Republic* and separate pamphlet on the *Nuptial Number* in which many of his results have been largely anticipated. (The only work in English to which reference is made is Bury's edition of the *Symposium*.) It is further shown that the version of the Orphic cosmogony which Plato has in view in both dialogues has been largely influenced by the scientific theories of Empedocles, himself, of course, to a great extent an Orphic. I think the case is fairly made out for the writer's view that Plato has

pretty certainly in view in the *Symposium* an actual work expounding an Orphic-Empedoclean cosmogony which he is parodying. The likelihood of the existence of such a work is made all the greater by certain considerations which Dr. Ziegler does not mention. The cosmology and physiology of the *Timæus*, though ascribed to a Pythagorean contemporary of Socrates, is markedly Empedoclean in a host of points. This, of itself, would suggest the existence of a school of cosmologizing physiologists and medical men who attempted to fuse the Pythagorean principles with the Empedoclean doctrine of the "elements," and we have, since the publication of the fragments of the *Iatrica* of Menon, positive proof that there was such a school, and that Philolaus, whose significance for the thought of Socrates is indicated in the *Phædo* and *Gorgias*, belonged to it. Now it is just from some such quarter that a fusion of Empedocles with an older and cruder version of Orphic ideas is likely to have come. (I do not mean that Philolaus himself is at all likely to be the source of the cosmogony parodied by Plato. From the *Phædo* we should rather infer that he and his scholars had dropped the cruder and older "Orphic" features of Pythagoreanism, which, in fact, are in that dialogue rather ascribed to Socrates.) I do not think the suggestion that Protagoras and his ἀντιλογικοὶ λόγοι have anything to do with the matter a very happy one, since one can account for the tale of Aristoxenus about the dependence of the *Republic* on Protagoras without the pure hypothesis that it arose from a resemblance of the proposals of the *Republic* about women with similar paradoxes of Protagoras. Though I admit that Dr. Ziegler, who rightly dwells on the connexion of the Epimetheus-Pandora story with the myth of men who were γηγενεῖς might make something of the fact that it is precisely this story on which Protagoras dwells in the dialogue called after him. (This might also have been brought into connexion with Plato's own myth of γηγενεῖς in the *Republic*. One might even suggest that the tale of Aristoxenus had no better foundation than the coincidence between the story told by Protagoras in Plato, and conceivably, therefore, in his own epideixeis, with Plato's humorous proposals about the use to be made of the fiction of the γηγενεῖς in the *Republic*. However that may be—and our extant specimens of ἀντιλογικοὶ λόγοι would hardly lead us to look for such a myth in discourses of this kind—I think a good case has been made out for the view that the discourse of "Aristophanes" is based on a lost work presenting an Orphic cosmogony strongly influenced by Empedocles. And further I am personally ready to accept the view that the notion of γηγενεῖς as bi-sexual stands in close connexion with the old Hesiodic doctrine that Heaven and Earth—the original parents of us all—were at first one until they were separated by violence. That the supposed severance of the bi-sexual γηγενεῖς is meant to represent Man the microcosm as having experienced a fate exactly like that of the great Cosmos seems likely enough. But I do not find it so easy to take the final step to which Dr. Ziegler invites us. He dwells rightly enough on points of resemblance between the Hesiodic and Orphic myths and the creation stories of *Genesis*, which he regards as remnants of the Babylonian creation-myth related by Berossus. Hence he concludes that the ultimate origin alike of the Genesis narratives and of the Orphic cosmogonies is to be sought in Babylon. I think the influence of the *Panbabylonismus* fashionable in Germany leads him to underrate the weakness of some of the links in his reasoning. To begin with, it is hardly legitimate to treat the narratives of *Genesis* i. and *Genesis* ii. as parts of one and the same story. Some of Dr. Ziegler's most striking points are got from the story of *Genesis* ii., but it is precisely this narrative which it is hardest to connect with the Babylonian myth. The

indications are rather for a Canaanite origin. (See Gunkel's treatment of the chapter in his Commentary.) On the other hand, it is essential to the argument that the "first man" should be bi-sexual, and this point can hardly be got out of the "Jahvist" account of the creation of Eve. Dr. Ziegler follows certain mediæval Jewish writers in regarding the "man" of *Genesis* i. (the so-called "Priestly" narrative), as bi-sexual, but, as I have said, it is rash to extend results derived from analysis of the "P" story to the version of "J". And the underlying ideas (1) that mankind are sprung from Heaven and Earth, (2) that Heaven and Earth were originally a single being are found too widely distributed to be accounted for by a theory of Babylonian origin. (*E.g.* the tale of the sundering of Heaven and Earth is well known to be a myth among the Maories.) The correspondence between Babylonian and Maori ideas is surely to be accounted for rather by a resemblance between the mental condition of "barbarians" all the world over than by any theory of borrowing. And what is manifestly true in this case may be equally true of coincidences between Babylonian and Orphic ideas. Thus I do not think any good grounds can be discovered for assigning an Oriental origin to the latter. And it is at least significant that though the legends of Orpheus are connected with different localities, no legend connects him with the East. He is found connected specially with Pieria and Crete, and to some extent with Attica. And early legend further suggests close connexion of these localities in prehistoric times. (Thus for Athens and Crete we have the persistent Minos and Theseus story, for Athens and Thrace such tales as those of Boreas and Oreithyia, and of Tereus, Procne and Philomela.) Hence it seems rash to look for a non-Hellenic origin for Orphicism in the present state of our knowledge.

A. E. Taylor.

Aristotelian Studies. I. *On the Structure of the Seventh Book of the Nicomachean Ethics.* Chapters i.-x. By J. Cook Wilson. 1879. Reissue (1912), with a Postscript on the authorship of the Parallel Versions. Oxford: Clarendon Press, 1912. Pp. 103.

Most students of Greek Philosophy may be assumed to be acquainted with Prof. Cook Wilson's learned and acute discussion of the real or alleged "doublets" in the Seventh Book of the *Ethics*. As his pamphlet originally stood, the conclusion to which it pointed was decidedly disturbing, for the assumption of a different authorship for the separate versions of each "doublet," if consistently carried out, threatened to leave us in the gravest doubt whether we really possess Aristotle's own statement on some of the most important points of practical philosophy, such as the true character of choice and the real solution of the problem of "incontinence". It is therefore good news to learn from the *Postscript* to the present reissue that Prof. Cook Wilson has since satisfied himself, from his own experience as a teacher and writer, and from a study of the methods followed by the editors of Hegel's lectures, that a great many of the "doublets" may be sufficiently accounted for by the suppositions—natural enough in any case—that Aristotle himself modified points of doctrine in the course of working up his theories into fitness for final "dictation," and that he had sometimes occasion to repeat statements which he had previously made without access to the actual notes in which they had been recorded. On the more general question whether Aristotle's "works" are books meant for circulation or the manuscripts of lectures —the latter supposition would of itself account for at least as much variation as any one has ever detected in the "doublets"—Prof. Cook

Wilson still persists in holding to the former alternative. As the second has not only an intrinsic attractiveness but the authority of some very considerable names in its favour, I could wish he had given us his reasons for his decision and not contented himself with the magisterial dictum that "this idea" is "not to be entertained". As it is he merely hints that the internal evidence from style and the mechanical difficulties of taking the notes must be borne in mind. Now, as to the first point, the "internal evidence" has been actually appealed to on the other side; and as to the second, two observations occur at once. If the friends of Aristotle had his *own* manuscripts before them, as is assumed by Wilamowitz, the difficulty vanishes or becomes minimal, as Aristotle was at liberty to take as long as he pleased over the preparation of his discourses; and, moreover, we must not exaggerate the difficulty which a hearer would have in reporting a lecture. Plato assumes that the *Theætetus* is based upon a transcript of Socrates' conversation made at the time by Eucleides and corrected by subsequent appeals to Socrates himself on points where the transcriber was in doubt. This is enough of itself to show that in Plato's opinion it was at least a plausible fiction that a correct report of a long and difficult philosophical discussion could be obtained in this manner. And Aristotle's first hearers would, of course, have the opportunity, which Plato provides for by Eucleides' repeated visits to Socrates in the prison, of discussion with the master himself. Indeed it is not necessary to suppose, on the "lecture" hypothesis, what Prof. Cook Wilson seems to assume, that the pupil's first draught would consist of notes written down during the actual delivery of the lecture. Plato makes Eucleides say that he began by writing down the conversation between Socrates and Theætetus immediately *after it was over*. And I can bear witness from my own undergraduate days that it is far from impossible to make a verbatim report of a lecture even during its delivery. (I once had many such verbatim reports taken by myself of certain lectures by Prof. Cook Wilson and other Oxford lecturers.) Hence I cannot but think that the rejection of what I have called the "lecture-note" theory of the *Ethics* a little too peremptory. I could also have wished for some discussion of the very important view of Prof. Burnet that the discussions of the *Ethics* are essentially dialectical resolutions of τόποι. If we adopt this view the discrepancies which Prof. Cook Wilson urges as the main argument for his theory of "doublets" disappear, as it follows that the author is not bound by all or any of the solutions he gives to his problems. *E.g.*, the various suggested explanations of ἀκρασία will be successive "aggressions" to a full solution, not rival attempts at solution, and there will therefore be no reason why there should not be differences between them both in the statement of the problem and in its solution. It is all the more to be wished that some notice had been taken of Burnet's view, as Burnet's own application of it to the treatment of ἀκρασία in the *Ethics* (see his notes on the opening chapters of VII.) was plainly meant as a rejoinder to Prof. Cook Wilson's statement of his "doublet" theory in the original issue of the present pamphlet. The full strength of Burnet's position can only be appreciated when one considers the great extent to which the special points of difference between alleged "doublets" appear to be due to the desire to deal with special presentations of ethical τόποι in the Platonic dialogues. This preoccupation with the minutiæ of Plato's utterances is surely more explicable in Aristotle than it would be in an editor who had not been brought up in intimate personal relations with the Platonic circle. If we allow for it, we can, I think, ascribe most of the "doublets" to Aristotle himself without needing to explain them by the special causes dwelt on in Prof. Cook Wilson's *Postscript*, though

these, no doubt, must have been really operative in accounting for some amount of repetition with minor variations of expression. Nor should we forget, as Prof. Cook Wilson seems to do on page 93 at least, that there really is "ancient tradition" at least for the view that Aristotle did not make "copies for publication" of the *Physics*, *Metaphysics*, or *Ethics*.

A. E. TAYLOR.

Uber den Einfluss Newtons auf die Erkenntnistheorie seiner Zeit. Von H. G. STEINMANN. Friedrich Cohen. Pp. 81.

This little book is divided into four sections. The first deals with the nature of Newton's physical and metaphysical principles, and the historical setting in which they appeared. The remaining three deal with the influence of Newton's theories on his contemporaries or immediate successors in England, Germany, and France respectively.

Newton's expressed objection to hypothesis was really only an objection to the invention of corpuscular explanations based on a desire to reduce all physical action to pressure and impact, which were supposed to excuse a man from further examination as to the exact laws that motions obey. His actual method was hypothetical-deductive; you started with principles, deduced consequences mathematically, and then verified them. Nor was Newton averse to corpuscular theories as such, as his *Optics* shows; all that he disliked was (1) their gratuitous introduction to save *a priori* prejudices about the nature of interaction, and (2) their introduction as a general qualitative explanation without definite numerical values being assigned and results being mathematically deduced from these and the general laws of motion. Newton, according to Dr. Steinmann, left two very weak places in his system: (*a*) the doctrine of absolute time and space, and (*b*) the making of these an essential part of even pure mathematics,—*e.g.* space in geometry, time in Fluxions. Newton seems to have taken time as *the* independent variable *par excellence* and yet his definition of absolute time is circular.

It was on these points that successors fastened. Berkeley's attacks in the tract *De Motu* and in the *Analyst* on the whole spring from too radically opposite a view to be of great value; for Berkeley thought immediate sense experience so certain that hypothetical explanations of it by what could not be directly perceived were a mistake. But he made the criticism that absolute space is indistinguishable from mere nothing which other philosophers have made; and he has some perfectly valid criticisms on certain incautious expressions of Newton about the nature of a differential coefficient. Since Berkeley admitted the volitions of God as the causes of our sensations and of their law-abiding character, I do not see why he should not have accepted the Newtonian mechanics as an account of the laws to which out of benevolence to us God subjects certain of His volitions.

Leibniz in the letters to Clarke concerns himself partly with the question of space as the Sensorium of God, but mainly with an attempt to refute absolute time and space from the doctrines of the identity of indiscernibles and the principle of sufficient reason, and a rejection of *acto in distans* as irrational. Dr. Steinmann thinks he was right in the former and wrong in the latter undertaking. But he chides Leibniz for accepting the relativity of space and yet trying to keep the distinction between absolute and relative motion by the question of whether a body had or had not moving force in it. Whilst one cannot admire Leibniz's expedient, I should be inclined to say that its introduction only showed

that Leibniz's knowledge of the laws of mechanics had convinced him that something corresponding to Newton's distinction was essential, and he naturally made the distinction fit in with his general metaphysical theories.

Dr. Steinmann has some very interesting remarks about the influence of Newton on Wolff, who appears not to have been nearly so black a rationalist as he has been painted by Kant. He definitely preferred Newton's theory of attraction to Leibniz's, and his own idea of scientific method was not very different from Newton's, but has been misrepresented because he used the word *a priori* not as Kant used it but as we should use the word deductive. I am not acquainted with Wolff's writings, but as Kant certainly misrepresented both Leibniz and Hume, it is not unlikely that he also made mistakes about Wolff.

In France Newton's earliest converts were Voltaire and Maupertuis; but by far the most important was D'Alembert. To him we owe the general application of Newton's principles to rigid bodies, and he also discussed the nature of space and the measurement of time. He made a definite separation of pure from applied mathematics, considered algebra the most general and certain discipline, and freed mechanics from the exclusively geometrical treatment which Newton had used, and, on theoretical grounds, recommended.

There are several misprints in the book. Pages 22 and 23 are in the wrong order; and there is a bad printing muddle on page 62, a line being repeated.

C. D. Broad.

Der Gottesgedanke in der Geschichte der Philosophie. Dr. H. Schwarz. Erster Teil. Von Heraklit bis Jakob Boehme. Heidelberg, 1913. Pp. viii, 612.

The present volume forms the first part of a learned and eloquent work which, when completed, will apparently trace the history of the notion of God in the philosophers and theologians from the dawn of Greek speculation to our own days. The detailed study which Prof. Schwarz gives to the mystical writers, from Dionysius "the Areopagite" onwards, will make his book of real value to students of the history of *Religions-Philosophie*, who can hardly be expected, as a general rule, to master the enormous literature of mysticism for themselves. And, speaking more generally, I have found Dr. Schwarz always suggestive, if not always convincing, in his estimate of the religious aspect of the world-philosophies. I think, however, he often gives the impression of being swayed by an undue desire for neat logical systematisation. His classification of the different types of *Gottesbegriff* corresponding to the specific functions assigned to God in the various philosophies is luminous and instructive, but one cannot help doubting whether great philosophers have commonly kept to a single point of view in their use of the notion of God. Have not they, like other men, commonly sought the satisfaction of more than one kind of need in the thought of God? Thus it is, *e.g.*, true in the main to say that whereas with Plato, as with Prof. Varisco in our own day, it is the feeling for ethical values which gives his Theism its peculiar character, in Aristotle God figures mainly as the solution of a cosmological problem. For Plato God is, in the first instance, the "captain of our salvation," for Aristotle He is "the Great First Cause". But one puts the contrast in too sharp a form if one forgets that Aristotle also holds that "the really good" is the object of all natural and unperverted appetition, and for Plato God has a cosmological significance, and is not

only the "pattern" whom we must imitate, but also the "father and fashioner of us all". The difference between the two philosophers is, after all, only one of emphasis, like the difference between St. Paul and St. James about "faith" and "works".

I should add as a general reflection that Dr. Schwarz cannot free himself from certain standing prejudices quite as fully as the nature of his task requires. He has a violent hatred of "transcendence" in religious thought, which leads him to maintain, *e.g.*, that Our Lord's doctrine of the Father is purely "immanental," and gives a curious colour to his whole treatment of the great formative period of Christian theology. Thus he has to commit himself to the view that the whole development of the doctrines of the Trinity and the Person of Christ rested on a radical misunderstanding of the revelation of Jesus, and yet to recognise the patent truth that given the Gospel as the basis for theological speculation the development was inevitable: from such a basis nothing *but* the conception of the God-Man of the orthodox creeds could develop. So St. Augustine would probably be surprised to hear that he represents the true concept of a wholly "immanent" Son of God, cut loose from any special connexion with the Jesus of history, in contrast with the narrow historicism of Athanasius. If one does not share the author's "immanental" bias, one is likely to judge differently of the historical development. But Dr. Schwarz has at least always something to say which is worth pondering.

A. E. TAYLOR.

KURT RIEZLER: *Die Erforderlichkeit des Unmöglichen; Prolegomena zu einer Theorie der Politik und zu Anderen Theorien.* München: George Müller, 1913. Pp. 262.

Politics neither fall beneath the sway of chance nor are susceptible of speculative determination *a priori*. Hence political theory must needs operate within a framework of presuppositions. It is the task of prolegomena to define these and to exhibit their relation to analogous structural principles valid on other levels of investigation,—to causality for example and notably, as presupposed in the world of mechanism within which, for the Kantian, organic, social and ethical life in some sense falls. And furthermore, to determine with what reserves the investigation is to be held capable of solving its problem.

Herr Riezler's free construction starts from Kant. He finds the laws or uniformities of politics in a realm of ends. He believes that the consideration of ends is forced upon us by failure upon the mechanical plane adequately, or without remainder to solve the problem even of that plane. In the field of ends too, while at every stage the solution of the problem of the stage, that is put forward, is a necessary step in advance, it cannot be adequate to the real. The residual factor ensures partial defeat. Just as in the mechanical order, the phenomenon is to be regarded as a fragmentary expression of something never fully projected into the spatio-temporal world, so we have on any and every level to acquiesce in an asymptotic relation between the construction by necessary forms or uniformities and the real which it makes its progressive attempts to express. The analogy of projection upon a more limited field with resultant imperfection of explanation alike of the projected real and of its projection is Herr Riezler's keynote.

It is virtue of his more direct derivation from Kant and because of the form in which he holds that on no level and in no point of view is the problem solved for the thing-in-itself, the infinite whole, that Herr

Riezler expresses his dissent from Bergson, to some of whose doctrines, notably that in regard to time, he exhibits affinities. It is again in connexion with the sense in which the postulates of reason are unsatisfied that Kant's own dualism between the form and the matter of morals comes in for criticism. In either case Herr Riezler sets forth clearly and modestly what the rejection means to him.

Apart from the main issue of his essay, Herr Riezler perhaps tends to scatter too much. He throws some light on the relation of an individual's end to those of others, and is instructive on the relation of individual to social good. He is oracular in characterising the differences of the sexes, where his *mots* may please the curious. He offers a very brief indication of a philosophy of the fine arts, has remarks of some interest on nationality, and does not resist the temptation of a fling at the dream of universal peace, scarcely justified perhaps on the principles which he himself outlines, and calling for a consideration of naturalistic evolution which is missing.

The author's quodlibetics supply however an agreeable foil to his stimulating expression of the spirit of Kant and his laboured central paradox.

HERBERT W. BLUNT.

Philosophie des Möglichen: Grundzüge einer Erkenntniskritik. Von Dr. JOHANNES MARIA VERWEYEN, Privatdozenten der Philosophie an der Universität Bonn. Leipzig: Verlag von S. Hirzel, 1913. Pp. x, 240.

Those who are especially interested in the philosophy of possibility, or the logic of probability, are most likely to be disappointed in Dr. Verweyen's new book, since it appears to contain very little, if anything, that might be regarded as an original contribution to the study of the problem of possibility in particular, or to a theory of knowledge in general. The fact is that Dr. Verweyen is chiefly interested in the philosophy of religion, and has only taken up the study of the problem of possibility because of its bearing on free-will, miracles, and similar topics intimately connected with the study of positive religions generally, and of Catholicism in particular. And although one could not justly impute to the author a lack of scientific sincerity, or of liberality of outlook, yet his thoughts on the subject seem to have been directed from the first towards a more or less definite goal, which, quite unconsciously no doubt, may have prevented him from considering the problem in all its purely scientific and philosophic aspects.

The main drift of the book may be briefly indicated as follows. Whatever is consistent with the Laws of Thought is formally possible; whatever is consistent with experience is materially possible; and *vice versa*. Now only some of the things that are formally possible are also possible materially, and only some of the things that are possible materially are actual. Thus everything actual is also materially possible and formally possible; and to be formally possible is to be logically thinkable or conceivable. Again what is logically inconceivable is also empirically or materially impossible, while that which is materially impossible may nevertheless be logically conceivable. To be conceivable, however, is not the same as to be imaginable. Our power of imagination is limited by our experience, and many things that we cannot imagine may nevertheless be quite conceivable, and therefore possible. And if only we make liberal allowances for the limitations of our experience, the realm of the possible becomes vastly extended, since formal consistency entails comparatively slight limitations. In this way it is made quite feasible to vindicate the possi-

bility of the Ascension, and of other ancient wonders, and even of the modern miraculous cures at Lourdes, etc. In some such manner Dr. Verweyen tries to make his philosophy of possibility subservient to the interests of Catholicism. And those who are especially interested in the apologetics of Christianity, or indeed of any other positive religion, may find Dr. Verweyen's book both interesting and suggestive.

A. WOLF.

MAX SCHELER: *Zur Phënomenologie und Theorie der Sympathiegefühle, und von Liebe und Hass; mit einem Anhang über den Grund zur Annahme der Existenz des fremden Ich.* Halle a. S., 1913. Pp. 154.

This acute and suggestive little book begins by distinguishing sympathy from experiences often confused with it. I may feelingly understand a friend's grief (nachfühlen); I may share it, if we have a common trouble; I may be infected by it; finally I may be sorry for it—feel for my friend's unhappiness as such. Only this last is sympathy proper. It involves no identification of myself with the friend; the sympathy is directed on him, as on a person distinct from me. Sympathy presupposes love, which therefore cannot be derived from it. Naturalistic explanations are also inadequate for both.

Love and hate are acts, directed on values. Love is described as the movement in which a valuable object reaches the highest value possible for it; hate as the opposite movement, in which the least possible value is reached. Loving a person is not the same as objectifying his qualities and loving them. His personality, which is not put together out of qualities, comes into existence for us only in our act of love, and is not an object for us then; we have it in so far as we complete his acts and experiences along with him, in 'nachleben' and in 'Gefolgschaft'.

The second part of the book, and also the last part of the appendix on the apprehension of other selves, I found interesting but difficult. I hope that in future work the author will carry on and amplify the conceptions involved.

HELEN WODEHOUSE.

Ernst Platner und die Kunstphilosophie des 18 *Jahrhunderts, nach ungedruckten Quellen dargestellt.* Von ERNST BERGMANN Privat dozent an die Universität Leipzig. Im Anhang; Platners Briefwechsel mit dem Herzog von Augustenburg über die Kantische Philosophie u. a. Leipzig: Verlag von Felix Meiner, 1913. Pp. v, 349. 10 M.

This book is a pendant to the author's recent work on German Æsthetic in relation to Baumgarten. It brings together a great deal of information about the condition of thought in Germany at the moment of Kant's emergence; and perhaps its greatest interest is the aid it gives in measuring the greatness of Kant's work. Much of the information, as the title tells us, is drawn from manuscript sources, especially from a volume of student's notes of Platner's lectures on Æsthetic; from a summons to Platner to account before an ecclesiastical authority for certain opinions "opposed to the Christian religion and to the maintenance of good order" in his Aphorisms (1776), in which Vaihinger has found anticipations of the point of view of the *Als ob;* and from letters, pre-

viously published only in part, between Platner and Friedrich Christian and Louise Augusta, dealing mainly with Kant's general philosophy.

The author claims no high value for Platner's Æsthetic theory. But the book is a carefully collected aggregate of curious and interesting detail; and Platner's attitude to Kant, a pre-Kantian prejudice which passed into something like a neo-Kantian scepticism, is exceedingly remarkable, and has of late brought Platner into notice once more.

B. BOSANQUET.

Leitfaden zur Untersuchung der Zerobrospinalflüssigkeit. Bearbeitet von F. PLAUT, O. REHM, and H. SCHOTTMÜLLER. Mit 5 Figuren im Text und 21 teils farbigen Tafeln. Jena: Verlag von Gustav Fischer, 1913. Pp. vii, 150.

This is a careful study of the Cerebro-spinal Fluid, which, owing to recent widespread epidemics of cerebro-spinal meningitis and other infections, has come into great prominence both pathologically and administratively. The study covers the general physics, chemistry, serology, cytology and bacteriology of the fluid as well as the special diseases associated with it. The plates, both coloured and uncoloured, will be a joy to every student. But, though excellent in its field, this study contains nothing specifically psychological or metaphysical or ethical. It is only right that the publishers, who have taken the greatest pains with the plates, should understand that MIND cannot very well deal with the problems discussed in works like these.

W. L. M.

L'origine subcosciente dei fatti mistici. P. AGOSTINO GEMELLI. Firenze, 1913. Pp. 119.

A brief and popular but scrupulously fair examination of the question how far the religious experience in general and the "mystic fact" in particular can be accounted for psychologically by the doctrine of subconsciousness. Father Gemelli naturally comes to the conclusion that "explanation" of this kind is only successful in dealing with some of the incidental accessories of the "mystic fact". The kernel of the experience, —the vivid sense which the mystic has that he is raised above the level of his normal self by actual contact with a higher personality is simply left unaccounted for by the psychologists of the subconscious. On this point the writer of this note feels inclined to agree with Father Gemelli, as he agrees also with the criticism passed on the illegitimacy of extending an hypothesis originally devised to deal with diseased and abnormal mentality to the explanation of experiences which, however rare and remarkable, are seen in their purest form in persons of unusual mental vigour, concentration and sanity. Still, while I would not deny Father Gemelli's conclusion that the central "mystical fact" *may* be incapable of adequate psychological description, I do not see why he should hold, as he apparently does, that it *must* be incapable of such description if the mystic is right in holding that his experience actually comes from God. Admittedly God does usually influence the mind through the machinery of secondary causes, and Father Gemelli further admits the presence of this machinery in the stages by which the soul is prepared for the mystic experience. Is it really necessary to theological orthodoxy to deny that the experience itself also involves the play of the "psychophysical mechanism"? I do not see why it should be so, unless one also holds that the

"psychophysical mechanism" equally counts for nothing in creative genius. Father Gemelli maintains this, but I doubt whether he would be so confident if, instead of confining his criticism to psychological theories based on the "subconscious," he had considered the possible analogy between the play of *normal* consciousness and the intuitions of the genius and the mystic. As it is, the possibilities of psychological description seem to be unduly restricted by the tacit assumption that a psychological account must be given in terms of the "subliminal," if given at all. In short, I do not feel sure that the impossibility of completely describing the "mystic fact" indicates a failure of continuity between that fact and the rest of our inner life. Does not the kernel of the fact vanish in any attempt to describe the functioning of the mind in purely psychological terms. *E.g.*, the "kernel" of any fact of cognition, however elementary, lies just in our certainty that we are knowing a true proposition, but what it is that makes the difference between such certain knowledge and mere confident error is more than any theory of the working of a psychological or psycho-physical mechanism can tell us. Münsterberg, who has worked out the purely psychological point of view with exceptional consistency, expressly declares that the "mind" studied by Psychology "knows nothing by its cognition and wills nothing by its volition". Thus I am not sure that Father Gemelli's contention really establishes the absolutely unique and "singular" character of the mystical experience; at the same time I do not see that it is necessary to establish such a result in order to justify the mystic's confidence that his experience really "comes from God".

A. E. T.

Opera hactenus inedita Rogeri Baconi. Fasc. IV. "Liber Secundus Communium Naturalium Fratris Rogeri, de Celestibus. Partes Quinque." Edidit Robertus Steele. Oxonii e Typographeo Clarendoniano, 1913.

One can only congratulate Mr. Steele on the growing excellence of his successive editions of the parts of Bacon's *Naturalia* and look forward with eager interest to the fifth fascicule which is to complete the work. The present instalment will, I fear, not reach a wide circle of students among the followers of philosophy, since it is only a specialist here and there who possesses the knowledge of mediæval astronomy requisite for complete understanding, yet the light thrown upon the difficulties and controversies of Bacon's contemporaries and Arabian predecessors is precious for those who cannot make a wide study of the subject for themselves, as showing how far from correct is the widespread notion that the "Middle Ages" uncritically accepted a single canonised theory of what we should regard as the fundamentals of astronomical science. To be sure, in all that concerns the metaphysics of the doctrine, the theory of the "fifth body," the incorruptibility of the "heavens," the nature of the "spheres," and the rest, Bacon, as usual, shows himself an almost slavish follower of the "philosopher" and the "commentator". But in Astronomy proper, he has views to defend for the sake of which he does not shrink from contradicting the "philosopher" to his face, and denying the validity of his arguments. I do not know enough of mediæval Astronomy to judge how far Bacon's theories are typical, but it is interesting to find that he upholds the doctrine of the "ten" spheres, placing the "watery firmament" of Genesis i. between the *primum mobile* and the heaven of the fixed stars. It is still more interesting that he thinks it most probable that the whole Ptolemaic scheme of eccen-

trics and epicycles is a mathematical fiction, and approves, even in mathematics, of the scheme of Al-Petragius, which attempted to account for the "appearances" by assuming only circular revolutions, all in the same sense. He has some remarks, which impress one as showing striking scientific penetration, about the unwisdom of deserting a physical theory which is otherwise promising merely because it presents problems in pure mathematics which are not yet soluble, and he is quite alive to the unfinished and progressive character of his science. Many of the mathematical objections urged against the admirably simple scheme of Al-Petragius, he submits, might vanish if observations and tables were worked out with it for their basis. One feels that a little later Bacon would have been very ready to consider the merits of Copernicanism, at least as a mathematical doctrine.

I may usefully append to this note a list of one or two passages in which the text, even as reconstituted by Mr. Steele's excellent editing, does not seem quite definitive.

P. 325, 17, est ibi *densior raritas;* the reading of O *diversitas raritatis* should have been promoted to the text. P. 345, 3, should not *apparet* here be *appar(er)et*, and so again in l. 22? p. 349, 32, *possibilitatem, possibilitatis?* The printed text seems to give a wrong sense. The meaning is that "outside the world" there is neither an actual vacuum nor a *possibilitas ad vacuum*. P. 352, 17, O is right in omitting *partes*. P. 370 l. 27, *a centro possunt linee duci infinicies vel non, tot quin plures.* The comma after *non* destroys the sense, as Bacon means that "there are an infinity of radii, or, if (as he would hold) there cannot be an actual infinite, there are never so many but what there may be more" (*i.e.* the number is indefinitely great). P. 378, 6, the comma after *esset* should be removed, the sense being *si esset plane figure*, "if it were of a plane figure, there would be a vacuum". P. 379, 24, *essent* should be *esset* (the subject is *vacuum*). P. 405, 15, for *incorruptibilibus* the argument requires us to read *corruptibilibus*. P. 419 l. 38 *ut uniformiter movere appareant.* The sense seems to require *(in)uniformiter* and *moveri*. P. 435, 25, *encentricam*, is not this a mere misprint for *ecentricam?* P. 448, 23-4, I think the comma at the end of l. 23 should be removed, as the *ipsum* of 24 obviously belongs to the *ecentricum* of 23; the *eum* of 24 also strikes me as doubtful, unless we construe "*corpus solis revolvit eum* (sc. *solem*)".

A. E. TAYLOR.

Received also:—

James H. Leuba, *A Psychological Study of Religion, Its Origin, Function and Future*, New York, Macmillan, 1912, pp. xiv, 371.

George Galloway, *The Philosophy of Religion* (International Theological Library), Edinburgh, Clark, 1914, pp. xii, 602.

Charles J. Shebbeare, *Religion in an Age of Doubt*, London, Robert Scott, 1914, pp. xx, 219.

J. S. Haldane, *Mechanism, Life and Personality, An Examination of the Mechanistic Theory of Life and Mind*, London, Murray, 1913, pp. vii, 139.

F. H. Bradley, *Essays on Truth and Reality*, Oxford, Clarendon Press, 1914, pp. xvi, 480.

W. Benett, *Religion and Free Will, A Contribution to the Philosophy of Values*, Oxford, Clarendon Press, 1913, pp. 343.

Charles E. Hooper, *Common Sense, An Analysis and Interpretation*

(issued for the Rationalist Press Association Ltd.). London, Watts & Co., 1913, pp. v, 172.

St. George Lane Fox Pitt, *The Purpose of Education, An Examination of the Educational Problem in the Light of Recent Psychological Research*, Cambridge, University Press, 1913, pp. viii, 83.

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VIII.—PHILOSOPHICAL PERIODICALS.

PHILOSOPHICAL REVIEW. Vol. xxii., No. 3. **F. Krueger.** 'New Aims and Tendencies in Psychology.' ["A complete scientific comprehension of the psychic life must systematically include a genetic theory of civilisation."] **G. P. Adams.** 'Mind as Form and as Activity.' [The concept of mind or self as activity, rather than as form or relation, is best fitted to survive in modern philosophy. Implications of the relational theory of consciousness; nature of mental activity; historical considerations.] **G. A. Tawney.** 'Methodological Realism.' [The doctrine of the externality of relations commits the New Realism either to the pure phenomenalism of Hume or to the thing-in-itself of Kant.] Discussion. **J. S. Moore.** 'Duration and Value.' [An analogy which subsists between the theories of Bergson, and Münsterberg's view of the relation of metaphysics and psychology, may be applied to the problem of time: psychologically discrete, time is from the standpoint of value continuous.] **E. B. Talbot.** 'In Reply to Professor Schaub.' [Fichte conceives his principle as unity of thought and being.] Reviews of Books. Notices of New Books. Summaries of Articles. Notes.—Vol. xxii., No. 4. **A. Lalande.** 'Philosophy in France in 1912.' [Durkheim's *Vie Religieuse;* Brunschvicg's *Philosophie Mathématique;* Bergson; Couturat.] **L. E. Hicks.** 'Identity as a Principle of Stable Values and as a Principle of Difference.' [Modern logic treats identity as a predication principle, whereas it is primarily a principle of stable values; critique of law of significant assertion.] **W. K. Wright.** 'Ethical objectivity in the Light of Social Psychology.' [In McDougall's doctrine of primary instincts and emotions we have the basis for an objective ethics which, being psychologically grounded, is scientific and empirical.] Discussion. **A. O. Lovejoy.** 'Error and the New Realism.' [Four monistic realists (Holt, Montague, Pitkin, McGilvary) offer different explanations of error; all are unsuccessful.] Reviews of Books. Notices of New Books. Summaries of Articles. Notes.

PSYCHOLOGICAL REVIEW. Vol. xx, No. 4. **J. R. Angell.** 'Behaviour as a Category of Psychology.' [Welcomes the tendency to objective methods and description, but deprecates the sacrifice of introspection.] **H. L. Hollingworth.** 'Judgments of Similarity and Difference.' [Experiments with samples of handwriting. Personal consistency for judgments of similarity is greater than for judgments of difference, though with repetition, adaptation, and familiarity with material the two categories tend to approach. Subjectively, judgments of similarity are the more easy, natural, and confident; the criteria of judgment are different in the two cases.]. **J. F. Shephard and H. M. Fogelsonger.** 'Studies in Association and Inhibition.' [Experiments with variously arranged series of nonsense syllables, made under objective and introspective control, show that in the acquisition of associations there is involved an inhibitory process which is not the mere result of drainage or division of energy, but has some deeper basis as yet unknown. This inhibition

plays an important part in many of the more complex mental processes]. **J. Peterson.** 'The Place of Stimulation in the Cochlea *versus* Frequency as a Direct Determiner of Pitch.' [Decides, after a review of current theories and criticisms, that the Helmholtz resonance-theory of specific energies still holds the field.] **K. M. Dallenbach.** 'The Relation of Memory Error to Time Interval.' [Tests with pictures and geometrical forms show that the memory error increases at first very rapidly, then more slowly, with time interval. The curve is thus the converse of Ebbinghaus' memory curve.]—Vol. xxi., No. 5. **E. K. Strong.** 'The Effect of Time-Interval upon Recognition Memory.' [Correct recognition (tested by lists of words) decreases at first very rapidly, then more slowly, with time-interval between exposure and identification. If percentage and validity are both taken into account, the relation of recognition-memory to time-interval is closely similar to that found by Ebbinghaus for recall-memory. Recognition appears to depend upon the revival of concomitant process.] **C. E. Ferree.** 'A Note on the Rotary Campimeter.' **R. M. Ogden.** 'Experimental Criteria for Differentiating Memory and Imagination in Projected Visual Images.' [Experiments by the word-method reveal general tendencies as regards localisation, distinctness and reaction-time, but afford no specific ground of differentiation. In the last resort the difference is probably one of meaning, and is carried by imageless elements.] **M. E. Haggerty.** 'The Laws of Learning.' [To the law of exercise (passage through *a-b-c-d* becomes easier and quicker with repetition), and the law of effect (reduction to *a-d* is determined by the nature of *d*) must be added a law of the linear and lateral irradiation of physiological states.] Discussion. **G. van N. Dearborn.** 'Ideo-motor Action.' [Critique of Thorndike.]

American Journal of Psychology. Vol. xxiv., No. 4. **K. M. Dallenbach.** 'The Measurement of Attention.' [Continues, with auditory stimuli, the study begun by Geissler with visual material. Experiments by the single-task and double-task methods show that attention may be measured introspectively in terms of attributive clearness. Special results are: a high correlation of reaction-time with degree of attention; a uniformly distracting effect of 'distractors'; and a reciprocal variation of levels in consciousnesses of the dual-division type.] **C. A. Ruckmich.** 'A Bibliography of Rhythm.' **G. H. Taylor.** 'Clinical Notes on the Emotions and Their Relation to the Mind.' [Emotivity varies with surroundings, age, disposition, type.] **D. O. Lyon.** 'A Rapid and Accurate Method of Scoring Nonsense Syllables and Words.' **H. L. Hollingworth.** 'Characteristic Differences between Recall and Recognition.' [Recognition and recall seem to be based on a neural mechanism of common pattern, operating in reverse directions: thus, determining tendencies are more effective for recall, the value of the single presentation is greater for recognition.] **E. J. G. Bradford.** 'A Note on the Relation and Æsthetic Value of the Perceptive Types in Colour Appreciation.' [Distinguishes five perceptive types or modes of appreciation of colour.] **M. Meyer.** 'The Comparative Value of Various Conceptions of Nervous Function based on Mechanical Analogies.' [Criticism of Russell's analogy of hydraulic machine; restatement of author's conception.] **E. T. Burr and L. R. Geissler.** 'An Introspective Analysis of the Association-reaction Consciousness.' [The 'concealing of a complex' is a special case of consciousness under negative instruction; its differentia is emotional intensity.] **J. E. Coover.** '"The Feeling of Being Stared At": Experimental.' [Belief in the feeling is common and groundless. It depends upon the ascription of objective validity to certain frequently experienced subjective impressions.] **F. Angell.**

'Projection of the Negative After-image in the Field of the Closed Lids.' [Critque of Mayerhausen.] **E. B. Titchener.** 'Professor Martin on the Perky Experiments.' [Minor Studies from the Psychological Laboratory of Vassar College.] **M. Browning, D. E. Brown, M. F. Washburn.** 'xxii. The Effect of the Interval between Repetitions on the Speed of Learning a Series of Movements.' [Distribution is found to favour learning in a case where the motor habits are not those of articulation; Jost's law may be a law of habit formation.] **H. Clark, N. Quackenbush, M. F. Washburn.** 'xxiii. A Suggested Coefficient of Affective Sensitiveness.' [Comparative study of affective response to colours and sounds; there is no correlation with ideational type.] **E. B. Titchener** and **W. S. Foster.** 'A Bibliography of the Scientific Writings of Wilhelm Wundt: Fifth Supplementary List.' Book Reviews. Book Notes. 'Psychology and Philosophy.'

British Journal of Psychology. Vol. v., Part 4. **J. C. Flugel.** 'The Influence of Attention in Illusions of Reversible Perspective.' [Experiments showed that two figures of reversible perspective, when seen simultaneously, may fluctuate independently of one another. This is unfavourable to the theory that such reversals of perspective are due to eye-movements, and to that which attributes them to a physiological cause affecting the whole of the central nervous system at the same time. When complicating details were added to the figures it was found that, even then, reversals may occur when attention was concentrated on the main outlines of the figures. When subjects adopted definite prescribed attitudes (*e.g.*, "willing" to see the figure without any perspective, or concentrating attention on one particular line) it was found that direction of attention was a highly important factor in such reversals of perspective. Usually that part of a figure which was especially attended to, appeared nearer to the observer. A special set of experiments on fixation showed that the above results cannot be due to eye-movements.] **Godfrey H. Thompson.** 'An Inquiry into the Best Form of the Method of Serial Groups.' [A discussion largely mathematical, with special reference to the two questions: (1) What is the best proportion of correct answers to adopt for the critical group? and (2) What is the best size of the group? These questions are further considered by application of general equations of the group process to data gained in experiments previously reported by the writer in the same journal. Answers suggested to the given questions are (1) the 80 per cent. point is preferable to 50 per cent. point in that it can be measured more accurately in the same time; (2) the smaller the group the better, indicating that mathematically the Method of Minimal changes is superior to any Method of Serial Groups—in which descents or ascents are stopped at the critical point.] **C. Spearman.** 'Correlation of Sums or Differences.' [Formulæ given for finding correlations of sums (*e.g.*, correlating pooled results of several tests with another order), or for correlations of differences (*e.g.*, improvement upon a former test shown in a second test), and of other averages. The customary replacement of the correlation of averages by the average of correlations is shown to be unsatisfactory.] **Gladys W. Martin.** 'A Study of Mental Fatigue.' [Fatigue was produced by arithmetical work of one or two hours' length. Subjects were tested, before and after work, as regards (1) spatial threshold, (2) muscular capacity, (3) rate of respiration, (4) rate of pulse, (5) speed and accuracy of perception. Analysis of the work itself showed that fatigue cannot be invariably estimated by diminution either of speed or of accuracy of mental work owing to complicating factors, *e.g.*, habit of accuracy and of method of working. Nor were the results of the special tests uniform even for three subjects.

Fatigue of one subject was shown by diminution of pulse and respiration rates, of another merely in the rate of pulse, and speed and accuracy of perception, of the third in rate of respiration and accuracy of arithmetical work. Writer concludes that signs of fatigue differ according to the individual, whose response under fatigue varies according to the "stability of disposition" previously acquired. Numerical estimation as to speed and accuracy of work may conceal fatigue.] **A. Wohlgemuth.** 'On Memory and the Direction of Associations' [Experiments with nonsense-syllables showed that, while the association of a syllable with the succeeding syllable is markedly stronger than its association with the preceding syllable, with diagrams and colours this was not the case. The directions of associations could be greatly influenced by voluntary effort, but much more so with diagrams than with nonsense-syllables. The predominant "forward" associations of nonsense-syllables is ascribed to the motor element, which was predominant in learning the syllables, but not with diagrams and colours; this suggests a distinction between physiological and psychological memory, association being reversible only in the latter kind.]

Revue de Métaphysique et de Morale. 'Numéro consacré à Henri Poincaré.' Armand Colin. The September number of the *Revue de Métaphysique et de Morale* is devoted to the memory of the late Henri Poincaré whose recent untimely death has left a gap in the scientific world that will not soon be filled. There are articles on Poincaré as a philosopher, a mathematician, an astronomer, and a physicist by **Brunschvicg, Hadamard, Lebeuf,** and **Langevin** respectively; and they are all worth reading. One gets a vivid impression of Poincaré's extraordinary eminence as a mathematician from M. Hadamard's article; it occupies forty-one pages and yet is little more than a list of his achievements in almost every branch of analysis. From M. Langevin I learnt two facts about Poincaré which were quite new to me; one was his interest in the technical application of scientific theories, the other was the fact that Poincaré seems to have had an innate capacity for discovering without difficulty the meaning of any symbolism, so that he could pass at ease from works written in one notation to those written in another where most men would have had to waste time and risk mistakes. It is difficult to know who is to fill Poincaré's place in the criticism of mathematical physics, at a time when that science is meeting with unprecedented theoretical difficulties of the most fundamental kind over the theory of Relativity and the Doctrine of Quanta. One of Poincaré's last articles was on the latter subject; and his rare combination of complete mastery of pure mathematics with a knowledge of the problems of physics and a philosophic mind fitted him peculiarly for such investigations.

Perhaps the most interesting result for the general reader that emerges from the article on Poincaré as an astronomer is that he refuted the proof that the present arrangement of the solar system is stable if left to itself, and thus removed one more favourite nineteenth century argument for design from the laws of the physical world.

The readers of Mind, however, will presumably be more interested in Poincaré as a philosopher. I cannot help feeling that, whilst all his books make stimulating reading, he was less eminent as a philosopher than in other branches of mental activity. M. Brunschvicg gives a clear account of Poincaré's opinions and defends them from the purely nominalist interpretation which M. Le Roy put on them. This is certainly quite in order; Poincaré himself in his *Valeur de la Science* seems to me to have left very little of M. Le Roy's theories standing. At the same time I think that Poincaré often failed to make clear what he meant by conven-

tion. There are two points quoted by M. Brunschvicg and one which he does not quote which will make clear what I mean. The first is the question whether there is any real difference between the Ptolemaic and the Copernican system of astronomy; the second is Poincaré's remark that in dealing with molecular physics you can always make your equations of motion of the second order (as they can be seen to be for the solar system) provided you assume enough molecules. And as you cannot perceive molecules you are at liberty to assume as many as you like, so that the validity of the laws of motion for molecular systems is a convention. Neither Poincaré nor M. Brunschvicg seem to notice that the element of convention is very different in the two cases. In the first Poincaré greatly underrates it. If motion be purely relative there *is* no difference between the two systems. Nor is Poincaré right in saying that results that are mere chance on the Ptolemaic system are consequences in the Copernican, for the two are simply different ways of describing precisely the same facts, and the sole difference between them is that of complication. On the other hand, in the matter of the molecules, the element of convention is overrated. If there are molecules at all there must be some definite number of them; hence the question whether their laws of motion lead to equations of the second or third order is one of fact, although we may not be able to decide it. You cannot be right or wrong about a convention, and that is why, if the relative theory of space be true, the question between Ptolemy and Copernicus *is* conventional, and that about the laws of motion is not. This brings me to a third point not mentioned by M. Brunschvicg. Poincaré had a bad habit of supposing that when it is practically impossible to be certain that you have got the right measure of a quantity there is no definite quantity to measure. Thus all his discussions about measuring-rods changing in length only tell us that if the lengths in the world all altered we might not be able to know it; but *he* seems to think that they prove that there is no such thing as an absolute distance at a given moment. Yet to talk of measuring-rods changing in length according to laws actually assumes what he is trying to disprove. And I am very much afraid that he thought that the rejection of absolute distance was involved in the rejection of absolute space, though I hesitate to bring such an accusation against such a man.

Poincaré of course recognised that the three systems of metrical geometry are all theoretically possible, and it was his merit to point out that you could not decide between them by experiment. Yet I could wish that he had gone much further into the very puzzling problem as to what exactly is *meant* when a person asks whether 'our space' is Euclidian. If, as he justly says, all experiments are performed on the properties of bodies or of light, and not on those of space, how can one say that the convention of Euclidian space is suggested by experience of solids?

I do not think Poincaré was by any means at his best in his controversies with the 'Logisticians' as he liked to call them. It is significant that whilst he was revelling in the contradictions of infinity Mr. Russell was solving them by the Theory of Types. And his attempts to prove that mathematical reasoning cannot be reduced to pure logic because it involves the principle of Mathematical Induction seem to me to have been based on a theory of deduction which ought to have led him to Mill's views about the syllogism. How he could call mathematical induction a case of perfect induction, and how M. Brunschvicg can accept this are questions that I cannot answer. His alleged perfect induction involves the passage from 'any' to 'all,' which is (*a*) quite independent of experience, and (*b*) as necessary in formal logic as in mathematics.

But, whatever may have been Poincaré's faults as a philosopher, he was

a very great man. He set the claims of the human intellect high in an age which was inclined to deny them, and his own intellectual achievements amply supported the claims. He is one of the few men to whom, without exaggeration, we may pay the compliment so justly paid to Newton: '*Sibi gratulentur mortales tale tantumque exstitisse humani generis decus*'.

REVUE DE PHILOSOPHIE. 1er Janvier, 1914. **P. Duhem.** 'Time and Motion according to the Schoolmen.' [Contradictory opinions of Pierre Auriol and Gregory of Rimini, on the question whether motion is possible to the universe as a whole. Gregory writes: 'A body moving steadily and regularly, and known as such, is time'. But how are we to know it? This comes to identifying time with the clock: where is the standard clock?] **L. de Contenson.** 'Kant on the *a priori* character of the Foundations of Mathematics.' [Kant never got beyond elementary mathematics, did not understand what a mathematician now means by 'continuity'. The concepts of time and space are imposed on the understanding by the nature of the object, not imposed on the object by the understanding of the subject. Kant himself expressly declares that, away from the concept of time, the subject is led to see a contradiction, that is an absurdity, in every change. Kant driven in upon Hegel.] **A. Véronnet.** 'Cosmogonic Hypotheses.' [History of the Earth and its Heat. Founded on Poincaré. Of interest to the mathematician.] **G. Jeanjean.** 'Critical Review of Pedagogy.' [A legion of new books on the *Émile* of Rousseau. Froebel and the Kindergarten.]

ARCHIVES DE PSYCHOLOGIE. Tome xiii., No. 3. **J. M. Lahy.** 'Une calculatrice prodige; étude expérimentale d'un cas de développement exceptionnel de la mémoire des chiffres.' [Case of a sister of Diamandi. There is no traceable heredity, and no sign of special endowment; the subject has industriously worked up visual rhythms, visual colour-imagery, motor memory, number-form, etc.] **E. Claparède.** 'Encore les chevaux d'Elberfeld.' [New observations and a review of publication, which leave us where we were. In an appendix, J. de Modzelewski suggests a theory of "inhibitory motor suggestion".] Recueil des Faits: Documents et Discussions. **V. Demole.** 'A propos d'un cas de conviction spontanée.' [Reply to Flournoy.]

ARCHIV F. D. GESAMTE PSYCHOLOGIE. Bd. xxvi., Heft 3 u. 4. **T. Haering.** 'Untersuchungen zur Psychologie der Wertung auf experimenteller Grundlage, mit besonderer Berücksichtigung der methodologischen Fragen. i. Ziel und Methode der Untersuchung.' [General defence of the Würzburg method. Programme of experimental work, in the principal fields of value, upon the psychology of valuation.] **J. Geyser.** 'Beiträge zur logischen und psychologischen Analyse des Urteils.' [Running criticism of A. Reinach, *Zur Theorie des negativen Urteils*, 1911, with construction in accordance with the writer's *Lehrbuch der allgemeinen Psychologie*, 1912.] **A. Kronfeld.** 'Über Windelbands Kritik am Phänomenalismus.' [Phenomenalism does not attempt, as it is charged, to "make the totality of the determinate in consciousness the appearance of a being which is in theory indeterminable". Fries' critique of knowledge saves us both from transcendentalism and from psychologism.] **A. Schackwitz.** 'Über die Methoden der Messung unbewusster Bewegungen und die Möglichkeit ihrer Weiterbildung.' [Methods for registering changes in size of pupil, contraction of bladder, heart-move-

ments, pulse, mass-movements of blood, have been brought to various degrees of refinement; none, at present, promise much for psychology Even the registration of the curve of breathing is simply a method of control. The recording of the expressive movements of the face, and of the involuntary tremor of the voluntary musculature (*e.g.*, of the hands, for which a new instrument is described), is of greater value.] **M. H. Boehm.** 'Der zweite deutsche Soziologentag (20-22. Okt., 1912, zu Berlin).' 'XVII. Internationaler Medizinischer Kongress, London, 6.-12. August, 1913.' Literaturbericht. Bd. xxvii., Heft 1 und 2. **W. Hellpach.** 'Vom Ausdruck der Verlegenheit: ein Versuch zur Sozialpsychologie der Gemütsbewegungen.' [On embarrassment, the most social of the emotions: its nature, sources, localisation, and its expression or outward symptoms; with special reference to the transformation and dissociation of these symptoms (embarrassed expression in woman a means of attraction; eccentric and pathological cyclism).] **T. Haering.** 'Untersuchungen zur Psychologie der Wertung (auf experimenteller Grundlage) mit besonderer Berücksichtigung der methodologischen Fragen, ii.' [Second instalment; analysis of the experience of the relation of finality (means supplied to end, and to means) and of economic and hedonic valuation. Tentative conclusion: all valuation is psychologically a matter of subsumption. The paper contains a biological theory of pleasure-pain.] **R. Friedmann.** 'Vorwort zur Charakterologie.' [Character is a constantly recurring complex of forms of reaction which, though not generic or interindividual, reappears as typical in the most diverse constitutions; and characterology can therefore be worked out only by the objectification of one's own psyche.] **H. Schmitt.** 'Psychologie und Logik in ihrem Verhältnis zur Sprache und zur Methode sprachlicher Untersuchung.' [Critique, in the spirit of Humboldt, of Wundt's and Paul's definition of sentence; new definition, with explication of the implied relations of language to psychology and logic; need of a study of the occasional and logical (individual and generic) meanings of terms.] **F. M. Urban.** 'Ein Apparat zur Erzeugung schwacher Schallreize.' [A tuning-fork, actuated by another, electrically driven fork, is rotated on its long axis.] **P. Koehler.** 'Ein Beitrag zur Traumpsychologie.' [Occurrence of intense religious feeling in a dream.] Literaturbericht. **C. Seeberger.** 'Wilhelm Wundt und seine Kritiker.' Einzelbesprechung. [Urban on Thomson, *Psychophysical Methods.*] Zeitschriftenschau.—Bd. xxvii., Heft 3 und 4. **A. Gregor.** 'Die hautelektrischen Erscheinungen in ihren Beziehungen zu Bewusstseinsprozessen.' [Experiments on the psychogalvanic phenomenon by the improved Tarchanoff method. Indifferent sensations are attended by a strong reaction, and there is no qualitative difference between the reactions to pleasant and unpleasant stimuli. Voluntary interference with the reaction is impossible. Actual emotions find pronounced electromotor expression. The paper deals further with the effects of fatigue, repetition, intercurrence of stimuli.] **T. Haering.** 'Untersuchungen zur Psychologie der Wertung (auf experimenteller Grundlage) mit besonderer Berücksichtigung der methodologischen Fragen: Schluss.' [Report of work upon moral and logical valuations. General result: all psychological-phenomenological analysis of valuation brings us face to face with pre-existing values; "psychology can never show how, psychologically, a value takes shape"; value itself depends upon extra-psychological conditions. An appendix gives samples of the observers' reports.] **O. Selz.** 'Die Gesetze der productiven Tätigkeit.' [Creation cannot be explained by reproduction alone, but requires the operation of a specific abstraction and combination. Four cases are distinguished: where means to the end are known, where they are not known but can be

found, where we must wait upon chance, and where a result produced in past experience is now intentionally made a goal of endeavour.] **R. Mueller-Freienfels.** 'Der Einfluss der Gefühle und motorischen Faktoren auf Assoziation und Denken.' [Polemic against the associationist psychology. What mind conserves, and what is active in mind, is not the intellectual idea, but rather the attitude, which shows itself in feeling, motor tendency, motor adaptation, etc. Speech, in particular, is a motor function and does not give rise to 'verbal ideas'.] **W. Wirth.** 'Eine Bemerkung von G. F. Lipps zu den mathematischen Grundlagen der sog. unmittelbaren Behandlung psychophysischer Resultate kritisch erörtert.' [Müller's point of departure is not only admissible; it is also the sole generally valid starting-point, and has practical advantages.] Literaturbericht.

ZEITSCHRIFT FÜR PSYCHOLOGIE. Bd. lxiv., Heft 1 u. 2. **G. Heymans.** 'In Sachen des psychischen Monismus, ii. Psychischer Monismus und "Psychical Research".' [Argues in detail that the facts of telepathy and spirit-communication, if they are facts, square better with psychical monism than with McDougall's animism.] **P. Meyer.** 'Über die Reproduktion eingeprägter Figuren und ihrer räumlichen Stellungen bei Kindern und Erwachsenen.' [Experiments with simple nonsense-forms. Children from seven years of age are adequate to the observations; they are more liable than adults to errors of position and direction; they err oftener by underestimation and less often by overestimation of size. Impression and retention are not furthered by the sight of surrounding objects. If the space-relations between stimulus and observer are varied, various types of impression become apparent; the normal exposure is preferred.] **W. Koehler.** 'Akustische Untersuchungen III und IV. Vorläufige Mitteilung.' [The tonal quality *s* is optimal at 8400 vs.; a pure *f* appears at about 17,000; soft *ch* has been heard above 30,000 and is probably pure at about 34,000; the limit of tone therefore lies presumably between 34,000 and 68,000. In sung vowels, the vowel-quality derives not only from the partial corresponding to the vowel, but from all partials which possess the vowel-valency. Partials combine to a resultant; and what we 'hear out' are not 'the' partials but remnants only. The observations suggest a remodelling of the Helmholtz theory to a theory of components.] Besprechungen. [Hellpach on Freud, *Traumdeutung*, etc.; Fischer on Cohn and Dieffenbacher, *Geschlechts-, Alters-, und Begabungsunterschiede bei Schülern*.] Literaturbericht. Der XVII. Internationale Medizinische Kongress. Kongress für Aesthetik und allgemeine Kunstwissenschaft. Bd. lxiv., Heft 3 u. 4. **C. von Maltzew.** 'Das Erkennen sukzessiv gegebener musikalischer Intervalle in den äusseren Tonregionen.' [The estimation of successive intervals depends neither on consonance (fusion) nor on distance, but on a specific experience of 'passage' or 'transition'. This experience is subject to the known laws of memory; to explain the mistakes made, however, we must add the hypothesis (borne out by other experiments) that the perception of pitch in the upper half of the 4-accented and throughout the 5-accented octave, as well as in the lower half of the contra-octave, does not accord with what one would expect from pitch-number (normal paracousia).] **W. Baade.** 'Über Unterbrechungsversuche als Mittel zur Unterstützung der Selbstbeobachtung: Vorläufige Mitteilung.' [Description of apparatus. Argues that, by systematic interruption of an experiment at known points, it is possible to get descriptions, by direct introspection, of processes otherwise accessible only to retrospection.] Besprechungen. [Selz on Watt's *Elements of Experience*; Wreschner on Dessoir's *Geschichte der Psychologie*.] Literaturbericht.

Der IX. Internationale Physiologenkongress. Bd. lxiv., Heft 5 und 6. **G. von Wartensleben.** 'Über den Einfluss der Zwischenzeit auf die Reproduktion gelesener Buchstaben.' [Reproduction of tachistoscopically exposed letters at intervals of 0 to 60 sec.; experiments made to test Finzi's optimal interval of 4 sec. The optimal interval (varying from 0 to 15 sec.) cannot be sharply determined for any observer, owing to complication of conditions; and conversely an unequivocal influence of interval upon range of right reproduction cannot be made out. Interval has both a favourable and an unfavourable effect (gives time to fulfil instructions, *e.g.*, for translation into auditory-motor symbols; gives time for conflict and vacillation, *e.g.*, in visual imagery.] **R. Mueller-Freienfels.** 'Typenvorstellungen und Begriffe: Untersuchungen zur Psychologie des Denkens.' [Every perception, and therefore every idea, is intrinsically typical, general: it is then further individualised or generalised by attitude and context. A perception is constituted by unity of reaction, *i.e.*, by a fringe of affective and motor processes; and these elements persist throughout the series of like formations. An abstract concept, *e.g.*, is a word about which cluster feelings and dispositions to activity, determined by context; understanding and knowledge themselves are not solely intellectual, but imply essentially feeling and readiness to action.] Besprechungen. [Hellpach on Marbe's *Fortschritte* and Külpe's *Psychologie und Medizin.*] Literaturbericht.—Bd. lxv., Heft 1 und 2. **E. Bleuler.** 'Zur Theorie der Sekundärempfindungen.' [Secondary sensations (such as appear in coloured hearing) do not depend upon childhood associations. All persons possess them in some degree; every one, *e.g.*, finds low tones 'large' and high tones 'small'; but they do not in all cases come to clear consciousness. Since they are original and not derivative, we may suppose that the sensory cortex responds to a given stimulus by a number of specific sensations, some one of which dominates.] **S. Meyer.** 'Die Lehre von den Bewegungsvorstellungen.' [The classical doctrine of 'ideas of movement' and of 'kinæsthetic sensations' must be given up. Our inherited movements are multiplied and refined by trial and error; we thus lay up a stock of memories of motor experiences, and in course of time acquire a technique. An 'action' is a serial exercise of memory; and 'will' is a determinate complex of mental and physical processes, which appears in consciousness only as the organising (*konstellierendes*) factor in ideas (Ach's determination). Motor memory is *unanschaulich*, has no memory images; and the 'motor type' thus stands in sharp contrast to the 'sensory types'.] **K. Groos.** 'Lichterscheinungen bei Erdbeben.' [The phenomena may, at times, be objective; but they may be produced subjectively by sudden jerk of the eyes.] Literaturbericht. Notices.—Bd. lxv., Heft 3. **D. Katz.** 'Über individuelle Verschiedenheiten bei der Auffassung von Figuren: ein kasuistischer Beitrag zur Individualpsychologie.' [Distinguishes a peripheral and a central type in the direct apprehension of optical forms: the former takes the figures as given, the latter tends to interpretation. The observer of the peripheral type is a pronounced 'visualiser'; possibly his attention is less analytic than that of the others. With time, however, he achieves a plasticity which seems to be unattainable by the central type.] **C. M. Giessler.** 'Der Blick des Menschen als Ausdruck seines Seelenlebens.' [Characterises the general and special forms (lingering, wandering), the directions, and the expressive content (empty, vague, concentrated) of human regard: the content depends on the mode of arousal of ideas. The eye is in general an organ of adaptation to distance, and in particular of social accommodation: in man, the high motility of the eye and the variety of facial movement bring the regard into close connexion with thought.] Literaturbericht. Kongress für Aesthetik.

RIVISTA DI FILOSOFIA. Anno v., Fasc. 1, January-March, 1913. **Bernardino Varisco.** 'Cultura e Scetticismo.' [Culture consists in the preservation, utilisation, and continual extension of knowledge. But there is nothing to know outside life, which again involves the perpetual interplay of knowledge and action. The scepticism which throws doubt on knowledge assumes a fixed absolute outside consciousness with which life has no concern, and therefore it leaves culture unaffected. The whole position, it may be observed, goes back in Britain to Alexander Bain.] **Giuseppe Folchieri.** 'Il carattere dell' opera di G. B. Vico.' [Vico's philosophy was determined at starting by its negation of the unhistorical position of Descartes. But the result was the complete fulfilment of Descartes' demands.] **Costanzo Mignone.** 'L'utopia della Critica Letteraria.' [As Imlac convinced Rasselas that it is impossible to be a poet, so this article proves—or attempts to prove—that it is impossible to to be a literary critic, and probably with no more destructive effect.] **Antioco Zucca.** 'La Lotta Morale.' [Written from what would be called at Cambridge the Unanimist point of view. The author pathetically complains that to judge by the Italian philosophical reviews of recent years the most renowned thinkers cannot theorise about the universe without flinging charges of ignorance and imbecility at one another. The impression produced on the present summarist is rather that Italian professors of philosophy form a mutual admiration society.] Bibliografia, etc.—Anno v., Fasc. 2-3, April-August, 1913. **Bernardino Varisco.** 'La filosofia di Schopenhauer.' [Written as an introduction to a forthcoming Italian translation of the pessimist philosopher. No German metaphysician is so easy to understand or so open to attack as Schopenhauer; but neither as exposition or criticism does Varisco's somewhat abrupt, elliptical, and oracular style convey this impression.] **A. Faggi.** 'La genesi storica della logica aristotelica.' [As against the one-sided views put forward by others Faggi maintains that Aristotle's logic was concurrently determined by the demonstrative method of geometry, the dialectic method of public debate, and the inductive method of the new natural sciences.] **Alessandro Padoa.** 'Legittimità ed importanza del metodo introspettivo.' [The intropective method in psychology is valuable as furnishing *data* that other students can test by comparison with their own experience.] **Adriano Filgher.** 'Imagine e sentimento nell'opera d'arte.' [Flaubert is right when he says that the greatest artists imagine without experiencing the passions they portray. As German philosophy used to put it: Art is the identification of object and subject.] **Alessandro Levi.** 'Bibliografia filosofica italiana' (1911). Note critiche, etc.

IX.—NOTES AND CORRESPONDENCE.

MIND ASSOCIATION.

There will be a joint session of the MIND Association, the Aristotelian Society, and the British Psychological Society at Durham, 3rd-6th July, 1914.

The following arrangements have been made :—

Friday, 3rd July.

7.30.—Dinner at Hatfield Hall.

9.0.—Annual Meeting of the MIND Association. President—Prof. F. B. Jevons.

Saturday, 4th July.

10.0.—Symposium arranged by the British Psychological Society—"The Rôle of Repression in Forgetting". Mr. T. H. Pear, Dr. T. W. Mitchell, Dr. A. Wolf, and Prof. T. Loveday.

3.0.—Paper on "Freedom," by Prof. S. Alexander.

8.30. Reception in University College by Rev. Henry Gee, Vice-Chancellor of the University of Durham.

Sunday, 5th July.

3.0.—Symposium arranged by the Aristotelian Society—"The Status of Sense Data". Mr. G. E. Moore, Prof. G. F. Stout, and Prof. G. Dawes Hicks.

Accommodation will be provided for gentlemen in Hatfield Hall, and for ladies in the Women's Hostel, at an inclusive charge of £1 5s. from Friday afternoon until Monday morning. Breakfast will be served at **8.30**, Lunch at **1**, and Dinner at **7.30**.

Members intending to be present are requested to make early application to Dr. H. Wildon Carr, 10 More's Garden, Chelsea, S.W., and in any case before 22nd June.

A Member desiring accommodation for a visitor must make special application, giving name and address.

The papers for discussion will be sent by post on 29th June to those who have made application to Dr. Carr.

The following have joined the MIND Association since the printing of last number:—

Miss H. D. Oakeley, 15 Launceston Place, Kensington, W.

Miss F. R. Shields, 3 Endsleigh Gardens, N.W.

INTERNATIONAL CONGRESS OF PHILOSOPHY.

The preliminary notice of the Congress which is to be held in London from 31st August to 6th September, 1915, is now being issued with the form of application for membership, and can be obtained from the Honorary Secretary, Dr. H. Wildon Carr, More's Garden, Chelsea, London, S.W.

The general sessions are to be devoted to special subjects to be introduced by Symposia on :—

1. The Nature of Mathematical Truth.
2. Life and Matter.
3. Realism.
4. The Philosophy of the Unconscious.
5. Pragmatism.

Presidents have been appointed to the Sections, which are as follows :—

I. General Philosophy and Metaphysics.
President, Prof. G. Dawes Hicks.

II. Theory of Knowledge.
President, Prof. S. Alexander.

III. Logic and Scientific Method.
President, Dr. A. Wolf.

IV. History of Philosophy.
President, Prof. W. R. Sorley.

V. Psychology.
President, Dr. C. S. Myers.

VI. Æsthetics.
President, Prof. Mackenzie.

VII. Moral Philosophy.
President, Prof. J. H. Muirhead.

VIII. Social Philosophy and Philosophy of Law.
President, Prof. Hobhouse.

IX. Philosophy of Religion.
President, Prof. Caldecott.

ANNOUNCEMENT.

A prize of one hundred dollars ($100.00) is offered for the best paper on the "Availability of Pearson's Formulæ for Psychophysics".

The rules for the solution of this problem have been formulated in general terms by William Brown. It is now required (1) to make their formulation specific, and (2) to show how they work out in actual practice. This means that the writer must show the steps to be taken, in the treatment of a complete set of data (*Vollreihe*), for the attainment in every case of a definite result. The calculations should be arranged with a view to practical application, *i.e.*, so that the amount of computation is reduced to a minimum. If the labour of computation can be reduced by new tables, this fact should be pointed out.

The paper must contain samples of numerical calculation ; but it is not necessary that the writer have experimental data of his own. In default of new data, those of F. M. Urban's experiments on lifted weights (all seven observers) or those of H. Keller's acoumetrical experiments (all results of one observer in both time-orders) are to be used.

Papers in competition for this prize will be received, not later than 31st December, 1914, by Prof. E. B. Titchener, Cornell Heights, Ithaca,

N.Y., U.S.A. Such papers are to be marked only with a motto, and are to be accompanied by a sealed envelope, marked with the same motto, and containing the name and address of the writer. The prize will be awarded by a committee consisting of Professors William Brown, E. B. Titchener, and F. M. Urban.

The committee will make known the name of the successful competitor on 1st July, 1915. The unsuccessful papers, with the corresponding envelopes, will be destroyed (unless called for by their authors) six months after the publication of the award.

CORRESPONDENCE.

DEAR SIR,—

It is more important to know what is the nature of scientific reasoning, and of Aristotle's theory of it, than what it is at present thought to be by the bulk of Oxford philosophical teachers; but a statement concerning the latter question by Dr. Schiller on the first page of MIND would naturally carry so much weight with those who read it, that I venture to send this note. Dr. Schiller says that "it has become a custom (having the force of law) in Oxford to restrict the study of Aristotelian Logic almost wholly to the *Posterior Analytics*, and to profess boundless admiration for this section of the *Organon*, on the ground that in it is laid down the theory of science on every subject for all time". I think he inadvertently misleads his readers. I remember Mr. C. Cannan a good many years ago, when he was the chief lecturer in Oxford on Aristotelian Logic, explaining to me the importance of the *Topics* in Aristotle's theory of scientific reasoning. I attended a few years since an admirable course of lectures on the subject by Prof. Cook Wilson, in which he criticised very lucidly and severely Aristotle's conception of demonstration, and utilised not only other treatises of the *Organon*, but the *de Anima*, the *Physics* and the *Metaphysics*. Similar criticisms occur in Prof. Cook Wilson's general course of lectures on Logic, which is the most influential teaching on Logic now given in Oxford; and I have discussed these matters with many teachers, and while I do not remember any one to have expressed the opinion which Dr. Schiller says is customary, I have often heard well-grounded criticisms of Aristotle's doctrines in the *Posterior Analytics* and elsewhere. I must not of course be understood to mean that the critics did not also appreciate the merits of that treatise.

Yours faithfully,

H. W. B. JOSEPH.

I am extremely sorry that the introductory sentence of my paper on "Aristotle's Refutation of 'Aristotelian' Logic," in No. 89, should have conveyed to Mr. Joseph any disparagement of the well-known Aristotelian scholarship of Oxford philosophy in general and of his own valuable contributions thereto in particular. But such an intention was so far from my thoughts that I cordially agreed with the important contention of his *Logic* (p. v-vi) that the 'corrupt tradition' of formal logic may be reformed by a return to Aristotle, and indeed had conceived my own article very much in the same spirit. What I was deploring (as an apologia for a somewhat detailed excursus into an obscure point of Aristotelian doctrine) was really that the exigencies of an overcrowded curriculum render it necessary, for teaching purposes, to lay selective emphasis on what are judged to be the most important doctrines

in Aristotelian logic, and that these consequently must inevitably assume greater prominence than they could have had in Aristotle's own mind. It must be remembered that Aristotle was far less of a specialist, and enjoyed a far more varied experience, both of science and of life, than falls to the lot of most of his modern students. Among the doctrines thus thrown into relief the Aristotelian theory of demonstration justly stands out, and I do not find anything in Mr. Joseph's explanations that really traverses the view that it unduly dominates our teaching. At any rate the prevalence of intuitionism in logic seems directly referable to it, and Mr. Joseph would hardly deny that the ideal of proof advocated in his own *Logic* is inspired by it. If he has, since 1906, changed his views on this point. the readers of MIND would, I am sure, be far more interested to hear him on it, or even on the substance of my argument, than on the single sentence to which he restricts his comments.

F. C. S. SCHILLER.